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The achievement of Robbins I

Building a better tomorrow

The Robbins report on higher education was published 20 years ago this autumn. Tatem-like, it has come to dominate the years between. It part reflected, part moulded, but in both cases most eloquently the aspirations of British higher education's most important generation since the founding of the great civic universities in the middle years of Victorian England, the Scottish Enlightenment of 80 years before, or even the golden age of the early modern university between the Reformation and the Civil War. Robbins - the name is sufficient to stir hopes and impressions that are often quite distant from the detailed text of the report.

Twenty years later there are three views of the legacy of Robbins. The first is that the report was entirely indigenous, in the sense that it grew out of the culture of the post-war British university; and that its assumptions are so much part of the fabric of modern higher education that they cannot in any substantial sense be rejected. The second, really an extension of the first, is that Robbins was also a backward-looking report, deeply committed to a vision of liberal higher education for scholarly gentlemen-citizens that was already out of date in 1963; that it was a particular reflection of an anti-enterpreneurial strata in Britain's elite culture; and that consequently Anthony Crosland's binary modification to build up "practical" forms of higher education was fully justified.

The third view is that Robbins was almost the last in a long line of reports in a tradition of Whiggish reform; that the impulse of reform embodied in that tradition was both a reaction to and a product of industrial revolution and empire; and that when ten years after Robbins and ten years ago we came sharply up against the incontrovertible fact of painful economic decline, reform became dispensable, a national judgement apparently confirmed as recently as June 9.

For those who favour this view Robbins becomes if not a mistake then a deviation. Somewhere in the last 20 years higher education went off course. The job in the 1980s is to put it back on course. Those who held to the first (and second?) views see the task ahead in almost opposite terms, to regain the momentum of Robbins that has been lost in recent years. Over the next few weeks I shall try to discuss the broad themes of Robbins, not in the cause of making an obituary, but in an attempt to make the choice between those two views.

Apart from Oxford and Cambridge and the four ancient Scottish universities of Edinburgh, Glasgow, Aberdeen, and St Andrews, the British universities are the product of the nineteenth and twentieth centuries. They were created to meet the new intellectual demands stimulated by the growing elaboration of science, the new vocational demands of a rapidly industrializing economy, and the new social demands produced by the development of a liberal democracy and the educational revolution that was its inevitable concomitant. Most of the great civic universities of the North had Midlands were established through the efforts of local civic and commercial elites. So from their earliest days most British universities were very much part of modern society. Indeed it is possible to be more positive, and to argue that the universities of the nineteenth century were key instruments of modernization.

The comparatively recent origin of the British university system needs to be emphasized. More than half of our present universities had not been established in 1900. Indeed almost half have only become universities since 1945, although some of these had much earlier and deeper roots within technical education. If the total number of

students in the measure, the British university appears an even younger institution. A case can be made for regarding our present universities as very much post-war institutions. In 1938/39 there were still fewer than 70,000 full-time students in higher education (50,000 in the universities). In 1980/81 there were more than half a million students, 307,000 of whom were in universities.

Although it would be misleading to ignore the influence of tradition, it would be equally misleading not to acknowledge that our present system of universities was largely created during the 1950s and 1960s. It happened yesterday, not a century or more ago. The typical British university today is the product of the University Grants Committee's plans for development made during the 1950s and of the Robbins committee's blueprint for expansion that was so spectacularly executed during the 1960s and 1970s.

Their first objective was the expansion of the universities. But why? This general desire to support a larger university system seems to be unproblematic because it embraced many, often divergent, motives. Some paradoxically perhaps saw expansion as a conservative policy - in two senses. First, they argued that because of rising standards in the schools and wider expectations of social mobility after 1945 entry to university was in danger of becoming much more competitive. The Robbins committee used this argument, although it moved far beyond it in its support for expansion. The Robbins principle - "all young persons qualified by ability and attainment to pursue a full-time course to higher education should have the opportunity to do so" - was translated into an operational policy which in practice meant that entry into higher education for those with A levels should be and large not be allowed to become more competitive than it had been at the beginning of the 1960s.

As the 1950s went by, the belief grew that universities were facing a crisis, a damaging excess of demand over supply, all too reminiscent of the housing shortage of the immediate post-war period. Well before Robbins the UGC in 1958 had remarked on the consequences of the rise in the birth rate after the war and the growing tendency of young people to stay on at school and to obtain the qualifications for entry to higher education. By 1963 the problem seemed much more urgent.

The second sense in which expansion could be regarded as a conservative policy was that any other policy would have led to a substantial change in the position of the universities within higher education. To suppress growing student demand would lead to a damaging rise in entry standards. The likely outcome would be to place greater and greater emphasis on academic standards, narrowly conceived when admitting students, and so devalue those broader extra-academic qualities to which the liberal university tradition attached considerable importance. Under these conditions the universities might become, in the view of an influential segment of opinion within them, over-academized; they would certainly be very different from the pre-war universities. To divert student demand into other, non-university, institutions would present a double danger: universities would not only become over-academized but they would also lose their hegemony over higher education as a whole.

So even conservatives had little choice but to support the post-war expansion of the universities. Whatever the long-term dangers, the failure to expand would in the short term both jeopardize the internal character of the university and undermine its external status within higher education as a whole. Academic hot-houses, by-passed by expansion and pushed to the margins of society could hardly appear an attractive future for institutions that traced their ancestry however remotely to the *studium generale* of the middle ages and which in Britain at any rate had acquired particularly incestuous links with the administrative élite.

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New centre will promote Britain, say economists

by Paul Flintner

A new economic policy research centre which aims to rival ventures in America and Europe and project British economic thinking internationally will start work in London in October.

It is to be modelled on the National Bureau for Economic Research based in Cambridge, Massachusetts, which acts as an "economics multiversity" but with no tenured staff. The centre will draw a group of 40 to 50 research associates from the universities and academic community.

Research will focus on the effects of international trade and financial money flows. Discussions are currently underway to finalize four detailed research programmes in international macroeconomics, international trade, perspectives in applied theory and econometrics, and economic history.

The centre's costs are put at £175,000 a year, with funding for the next five years pledged by the Social Science Research Council, which is to give £300,000 over the period, the Leverhulme Trust, the Esamée Fellows Trust, the Rockefeller Foundation, the Bank of England, the *Financial Times*, and Morgan Grenfell.

The director of the Centre for Economic Policy Research is to be Professor Richard Portes, professor of economics at Birkbeck College, London, who was behind the original plan. Professor Portes, an American who has taught in Britain since 1965, will continue teaching at Birkbeck.

"The impact and involvement of international trade and capital flows on the British economy has increased substantially since the last war", he said. But there has not been a corresponding increase in the research done on the operation of the open economy. This will be the task of the centre.

Professor Portes is also keen to see the "leadership of the economics profession" which has tended to rest in America since 1945 with people like Arrow, Tobin, Samuelson, Friedman, Modigliani, Leontief, and Klein, return to Britain with its traditions from Adam Smith to Keynes.

The board of governors for the centre includes Sir Douglas Warr, former head of the Treasury, Professor James Meade, Mr Jim Ball, head of the London Business School, Professor Amartya Sen, Mr Michael Posner, chairman of the SSRC, Mr David Watt, director of the Royal Institute of International Affairs, and Mr Jeremy Harvie, deputy chairman of the Monopolies Commission.

The centre will be based near St James' Square in central London, in premises adjoining Chatham House. It will share a library and meeting rooms with the Royal Institute of International Affairs and they will promote joint activities.

The centre will aim to bring policy-makers and researchers together in workshops and conferences, publish a series of policy papers, promote scale "targeted" research and encourage collaboration between academics.

About a dozen research associates are being appointed for each programme for limited but renewable periods, probably a three-year term. They will work in the centre while continuing at their academic base. There would be some international associates, and about one third would be under 35.

The centre would aim to complement existing in-house research institutes such as the Policy Studies Institute and the National Institute for Economic and Social Research, drawing in new funds in the form of grants from Whitehall and international sources, and new ideas from the existing academic community.

There is general agreement that Britain lacks research looking specifically at international economic aspects, while exports and imports make up a third of its national product. Germany boasts five independent research institutes, largely government-backed, while Sweden and France also have economic institutes.



MAKING HAY: Essex has proved that fewer cuts are good for universities this year. Campus parkland grass is now allowed to grow freely after years of regular mowing. And the resulting hay crop is gathered and sold at a profit.

UCCA reports fierce battle for places

The scramble for places in higher education, which begins in earnest next week with the publication of A level results, will be even more competitive than last year when record numbers of applications were received.

Both the universities and public sector institutions reported further increases in applications this week. And they warned that there may be fewer places available through clearing.

The Universities Central Council on Admissions has had an increase of 0.5 per cent in applications, thanks to a recovery in demand from overseas on top of a slight rise in last year's 134,000 home figures. UCCA forecasts a 1 per cent drop in the number of enrolments from last year's figure of 78,600 as the institutions fall in line with University Grants Committee targets.

Offers have generally been tougher

this year to provide more flexibility for admissions tutors, who had to insist on exact grades to meet numbers targets for 1982/83. The result may be more places available through clearing, although some universities will again have only minimal numbers of vacancies on a strictly limited range of courses.

The polytechnics, too, report greater pressure on places. Applications were well up in the early part of the year and most will be trying to keep a tight rein on numbers so as not to stir up trouble with the likelihood of cuts in budgets for 1984/85 arising from the National Advisory Body's planning exercise.

In teacher training the picture is more patchy. The majority of places for secondary postgraduate certificate of education courses this autumn have

been filled, but there are still many vacancies on BED courses.

The figures, which are updated daily, show that English courses are totally filled, but there were still places this week in 20 university departments, polytechnics and colleges for maths and 11 for physics. However, these are only open to candidates who have studied the subject as a major part of their degree.

A few places also remained in craft, design and technology and religious education at several institutions and in home economics at five institutions.

Applications to PGCE courses were marginally down this year, 18,250 as opposed to 18,791 at the same time last year but this is mainly due to institutions filling their places so early. Applications for 1984 are expected to be high.

THES scholarship value increased

The value of the *THES* Third World Fellowship, which facilitates academic exchanges between developing countries, is to be increased by £1,000 to £2,500.

Ten lecturers and university administrators have benefited from the award, which was established at the Commonwealth Universities Congress of 1973. It has enabled them to travel to other Third World nations to carry out studies of benefit to their own countries.

Dr Isaac Abayomi, a senior lecturer in community health and nutrition at the University of Ife, Nigeria, will be the first recipient of the higher scholarship. He was selected from 21 applicants to travel to Sri Lanka to study the organization of health services and to liaise with Sri Lankan universities to assess the input of medical schools in the health services.

His visit is likely to take place before the end of the year, although the political situation in Sri Lanka has delayed decisions on a timetable.

The fellowship is administered by the Association of Commonwealth Universities, which receives a report of the recipients' activities. The ACU will soon study the report of last year's *THES* fellow, Mrs Menana Tuone, a lecturer in economics at the National University of Lesotho, who carried out comparative studies in other African countries of the effects of the migration of male labour to South Africa.

There will be around 50 invited academics in the audience of 200 as well as two or three academic speakers. The City, Government departments, research councils, learned societies and industry will also be represented and Mrs Thatcher's presence will ensure that all the leading figures in the field attend.

The meeting will be the culmination of the Prime Minister's often expressed interest in science policy and problems of technology transfer. Her personal concern has already led to a number of initiatives including the recent Advisory Council for Applied Research and Development report on links between higher education and industry.

The Government's response to the ACARD will not be given until later in the autumn, but a Department of

Thatcher at high tech seminar

by Jon Turney
Science Correspondent

Academics with ideas for exploiting high technology will be able to put them directly to the Prime Minister at a special seminar next month.

Mrs Thatcher will give the opening address of a one-day meeting at Lancaster House on September 12 and will spend the day hearing speakers discuss how to turn Britain's scientific prowess into industrial wealth.

There will be around 50 invited academics in the audience of 200 as well as two or three academic speakers. The City, Government departments, research councils, learned societies and industry will also be represented and Mrs Thatcher's presence will ensure that all the leading figures in the field attend.

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Lecturers urged to polish up their styles of address

by John O'Leary

Unlike good white, lecturers do not improve with age, according to a study carried out at Loughborough and Nottingham universities.

Staff development experts analysed the responses of 258 academics at the two universities to 60 questions on how they prepared, structured and presented information in their lectures. The survey is claimed to be the first empirical study of lecturing styles.

Mr George Brown and Mr Moll Makher, of Nottingham's teaching methods unit, divided the lecturers into five categories:

confident, rarely uses any means of communication other than talk and tends to work from a script;

the extroverted, energetic, the largest group who lecturers from brief notes, think about and write down objectives and generally adopt accepted good practice;

The visual information giver, who provides full notes on a blackboard or overhead projector and tends to write down the whole lecture;

The amorphous talker, who is "unusually confident but not particularly adept at structuring or presenting lectures" and is said to be the most likely of all the types to pretend to know the

answer to a question when they do not;

The eclectic lecturer, who is least confident about lecturing and ability to achieve objectives. They try to prepare carefully but have difficulty in selecting and structuring their material.

It emerged that different subject areas carried their own lecturing styles, with scientists and engineers being predominantly "visual or amorphous", the humanities and biomedical sciences boasting the most exemplary performers and the social sciences scoring high in the oral session.

But, apart from a suggestion that professors and senior lecturers were marginally more exemplary in their

Peter Scott
Laurie Taylor is on holiday. He will be back on September 2.

Chemistry loses one in ten staff

by Jon Turney
Science Correspondent

Few teaching staff, less time for research and diluted technical support are the main results of the university cuts in chemistry departments across the country.

Many departments face further staff losses which could amount to 10 per cent by next year, according to a new survey by the Committee of Heads of University Chemistry Departments.

Among teaching staff, the survey found that the 5-10 per cent cut projected for next year came on top of an average 10 per cent reduction in staff numbers over the last four years. This has left chemistry with the highest peak among lecturers of any important science subject. The report says this will be the worst problem of the next 10 years, with newcomers to the discipline trapped on short-term research contracts.

The committee found that a post-doctoral fellow had only a very slim chance of a permanent university post and their report suggests that some of the most able young chemists are obtaining posts overseas and are likely to be lost from the British system altogether.

The survey, based on returns from 43 university departments, also found that technical and clerical staff numbers had been cut by 10 per cent or more. The committee regards technical staff as a special problem, as their absence makes research harder to

sustain. It complains that universities cannot compete with industry and commerce for the highly skilled technicians their departments now need.

Professor David King of Liverpool University explained that university salary scales were 20-25 per cent below industrial rates. "We take on young technicians and train them, but if they're any good they move on to firms outside", he said. He pointed out that the growing fashion for university science parks could make this problem worse.

Still other aspects of the cuts reinforce their impact on research, the report argues. The University Grants Committee equipment grant has declined significantly and departmental grants to chemistry departments have also gone down by more than 20 per cent since 1979.

The chemists set their faces squarely against suggestions that some universities might become mainly teaching institutions. "It is unacceptable that any British university should not have a chemistry department that is active both in teaching and research", the report says. It also defends the role of small departments within the system.

The committee stresses that more fundamental chemical research is carried out in the universities in Britain than in other industrialized countries, which tend to have separate research institutes. It says the current decline in university chemistry should be halted for the sake of the chemical industry.

News in brief

AUT steps up equality campaign

Up to date information on the steps already taken by universities to open up access for ethnic minorities, women and working class students is being sought by the Association of University Teachers.

The union this month wrote to all academic registrars seeking their cooperation in supplying information which will aid its campaign for wider availability of university education. In particular it is asking for details of admissions policies on racial minorities, people with handicaps, women and girls, mature students and applicants from poor educational backgrounds or with few formal academic qualifications.

Additionally it wants to hear of short courses or events designed to bring girls into science education and retired people into University of the Third Age initiatives. When the information is received it will form the basis of pressing the union's local branches to tackle their universities individually.

Second chance

The Wolfson Foundation is to continue its industrial research fellowship scheme for a second year. The foundation has made 14 awards under the scheme, which pays for an unemployed scientist or engineer to follow-up a commercial idea in a suitable laboratory, usually in a university. These awards were chosen from around 40 applications and the Fellowship of Engineering, which runs the scheme, will receive up to £750,000 for a second round of awards in 1983/84.

IBM choice

Mr Edwin Nixon, chairman and chief executive of IBM UK Ltd is to be chairman of the Joint Board for Vocational Education, established to run the new certificate of the same name which becomes available in schools and colleges from September. The board was set up earlier this year by the City and Guilds and the Business and Technician Education Council.

Curtain call

Westland College, London, has taken the 30,000 volume collection of the Play Set Library from the British Theatre Association on permanent loan. The sets will continue to be available in the association but will also be used by the college's own students, including those on the first MA in drama, which starts in October.

School plans name change

A Buckingham business school which upset the University of Buckingham at its launch in April is planning to change its UK trading name.

The Council of UMBC, the Management Centre from Buckingham, will be considering at its September meeting a proposal that its trading name should be changed to the International Management Centre from Buckingham (IMCB).

The centre's principal, Professor Gordon Wills, said in anticipation of the council's decision that the change of name would reflect the "rapidly developing international role" of the school overseas.

The modification of the centre's title, however, should smooth a disagreement which has been simmering since the start of the year between the University of Buckingham and the business school.

The school went ahead and published itself as UMBC while discussions were still in hand about establishing formal links between them. In January the university's senate, however, decided against any formal links.

By that time although the business school literature did not spell out any direct connection, the use of the initials and the presence of several university staff including Professor Peter Watson on the school's academic board and council gave the clear impression that there were closer ties.

The university threatened legal action at one stage while discussions continued between them while Professor Alan Peacock, the university's vice-chancellor, denied any links between the two bodies.

Professor Sir Douglas Hague, since 1979 an economic adviser to Mrs Thatcher, has been confirmed as chairman of the Social Science Research Council, underlining the strong "economic" image developing at the council.

Sir Douglas, whose appointment was announced this week, will be the fifth economist list of six chairmen of the council, which is shortly to change its name to the Economic and Social Research Council (ESRC). Lord Cocks, the first chairman, was a sociologist.

Ban on women stops chaplain swop

by Olga Wojtas

An exchange programme between higher education chaplains in the Church of England and Episcopal chaplains in the United States has fallen through because of the church's refusal to recognize ordained women chaplains.

Reverend Kennedy Thom, secretary for the Church of England's Chaplaincies in Higher Education said the president of the Episcopal Society for Ministry in Higher Education in America had been delighted by the prospect of chaplaincy exchanges proposed by the Chaplaincies Advisory Group.

Since the Church of England does not at present allow women to officiate, the full exchange where chaplains took over one another's posts for a term of a year could not begin.

"We couldn't possibly say send the men but not the women," said Reverend Thom. He added that it was "extremely anomalous that people validly ordained in other provinces of the Anglican communion could not officiate here. However, it was hoped to initiate study visits of three or four weeks, where the chaplains came as guests and did not have to officiate."

Last November Deaconess Diana McClatchey put a motion before the Church's General Synod that women ordained in other branches of the Anglican Church should be able to officiate in this country. The Synod's standing committee is to set up the necessary legislation but this could take three or four years.

Colleges were urged by the Further Education Unit this week to develop multicultural curriculum strategies which will respond to the needs of ethnic minority students in more than token form.

This is only the second policy statement that the FEU has ever issued on multicultural education and it stresses that since 1981 the situation has worsened because economic pressures have affected ethnic minorities disproportionately.

It says: "The incidence of unemployment is disproportionately high among blacks, the incidence of training is disproportionately low and there is a lack of evidence to indicate that high unemployment has exposed a level of racism that is disturbing, if not potentially dangerous."

Therefore curriculum development must not only concentrate on improving access to courses, reducing bias in syllabuses and examinations and improving teaching/learning strategies for ethnic minorities but it must also create an increased general awareness of the existence of racism.

"In many quarters such a awareness is lacking. Many institutions and individuals do not perceive the need in terms of policy or of practice. At the same time there are those who are actually aware of the need, and who may have formulated relevant policies, but require support and assistance to translate these into practice," says the unit.

It goes on to say that curricula do not include an essential multicultural dimension unless they are based on an understanding of social, cultural and political influences.

Such curricula should be based on acceptance that the development of equality of opportunity requires particular support for some students, such as language development, counselling and progression.

The FEU is planning to continue funding specific projects in multicultural education and has now established a working group of experienced people to assist and advise on future work.

The TUC acknowledges concern that the MSC's move to establishing a training system for adults will preempt the higher education sector's efforts. It wants the MSC to set up a high-level tripartite task group to examine the issues needed to achieve a "breakthrough" in adult training.

The TUC's main concern is that too little will be done. "The prospect is not a major MSC initiative but rather a tinkering with the existing arrangements - particularly as considerable resources will be needed," it says.

It considers the present system is very fragmented. Unnecessarily restrictive course entry requirements fail to take account of adult experience and unrealistic and inflexible course programmes, with the bias towards full-time study, do not meet the needs of most adults, the TUC claims.

The MSC's Open Tech scheme has been extended and additional funding sought to open up discussions with examining bodies and institutions to develop a more modular framework of course provision such as part-time and "open" courses using distance learning.

The TUC points to the Open Tech's success in encouraging developments like these in some technical and supervisory courses.

It also recommends that the MSC should establish a national unit to coordinate - in-house company training for all adults.

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The TUC acknowledges concern that the MSC's move to establishing a training system for adults will preempt the higher education sector's efforts. It wants the MSC to set up a high-level tripartite task group to examine the issues needed to achieve a "breakthrough" in adult training.

The TUC's main concern is that too little will be done. "The prospect is not a major MSC initiative but rather a tinkering with the existing arrangements - particularly as considerable resources will be needed," it says.

It considers the present system is very fragmented. Unnecessarily restrictive course entry requirements fail to take account of adult experience and unrealistic and inflexible course programmes, with the bias towards full-time study, do not meet the needs of most adults, the TUC claims.

The MSC's Open Tech scheme has been extended and additional funding sought to open up discussions with examining bodies and institutions to develop a more modular framework of course provision such as part-time and "open" courses using distance learning.

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by Paul Flather

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college representatives committee, and even the vice-chancellor, Professor Harry Hinsley.

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Mr Bolton-Jones believes the great traditions of the university have been betrayed whatever the merits of his son's case which he accepts cannot be affected now. However he is considering an appeal to the Ombudsman, and seeking a legal declaration that his son was unlawfully excluded, which could lead to damages. Mr Bolton-Jones could also appeal to the college Visitor, Prince Philip, who is the university chancellor.

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Lady Platt, who took the chair of the Equal Opportunities Commission in May, is also a member of the Engineering Council, a qualified engineer and a member of the House of Lords Select Committee on Science and Technology. She is committed to involving both organizations, and will chair the WISE steering group.

For the Engineering Council, the failure of university engineering courses to attract more than 8 per cent of female undergraduate is a waste of potential talent, while the EOC sees under-representation of women on science and engineering courses as a significant barrier to equality of opportunity.

The two groups plan to send mailings to every secondary school. "The first problem is to get girls to study science until they are 16," according to Julia Watson of the Engineering Council. Only then will they ever consider going on to study engineering at A level and beyond.

The WISE campaign will be launched at a press conference in September, when a calendar of events for next year will be issued. They have also commissioned a study of the whole range of existing schemes from Loughborough University. This will help in selection of the projects singled out for special publicity.

The organizers have already had second thoughts about one vital feature of the scheme. The original title was Women and Girls into Engineering and Science, or WAGES. They decided that Women into Science and Engineering offered a bappier acronym.

The dean of the medical faculty, who was asked to intervene, also refused saying it was an internal dispute which should be solved within the department.

Further approaches to the principal and rector do not seem to have led to a solution, and staff now hope to put their case to the Physiological Society, due to hold a meeting at Edinburgh at the end of September.

Staff have been officially forbidden to talk to the media, and it is understood that when the BBC was filming the *Campus* series about the university, it was prevented from reporting the problems.

However, former staff confirm that morale in the department is very low. One said: "Professor Watson has a traditional concept of authority and there are confrontations that don't promote a climate of happiness. Six staff have left in the last three years, allegedly because of tension within the department."

A spokesman for Edinburgh's Association of University Teachers said: "We are extremely disturbed that the situation is apparently continuing and we will be seeking efforts to seek a solution to the problems of the department."

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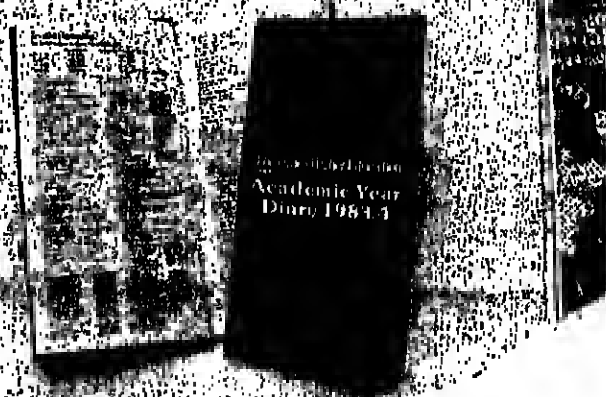
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Union fails in numbers game

by David Jobbins

A seat on the national negotiating machinery and their rival's brief flirtation with the Campaign for Nuclear Disarmament has failed to boost membership of the Association of Polytechnic Teachers.

The association's official return to the union certification officer shows that as of last December APT had 3,110 members in England, Wales and Northern Ireland, compared with 3,125 twelve months previously.

Although the fall is tiny (less than 0.5 per cent) it is the third successive year that the APT's membership has dropped. Union leaders could have hoped to pick up at least enough new members from the granting of a seat on the Burnham further education committee

to offset any fall because of premature retirements and other job losses. They could also have expected some spin-off from last year's decision by the annual conference of the National Association of Teachers in Further and Higher Education to affiliate to CND, reversed this year, but this effect was less certain.

APT leaders are clearly concerned at the decline, although they say the association's decision two months ago to start recruiting in higher education colleges outside the polytechnics is in response to demand and not an attempt to tap new sources for members.

But Naffie claims that its polytechnic membership is actually rising - with 470 joining since September 1982 restoring the total to just 10

above its March 1981 level of 122. However, membership in a polytechnic is not a figure the union has to lodge with the certification officer and it is very much an estimate.

Naffie officials say there have been no signs of a flood of local recruitment decisions in the APT's favour. One again they have questioned the relation between the total of subscriptions paid and the number of members registered. Dividing the then subscription of £15 into the £33,543 net subscription income gives just 2,236 members, Naffie argues.

The APT claims 296 members in Northern Ireland, at Ulster Polytechnic, but the merger with the New University of Ulster will effectively remove that stronghold.

ILEA rapped over APT recognition

The local government ombudsman has delivered a sharp rap over the knuckles to the chairman of a powerful Inner London Education Authority committee for his terse response to a plea for recognition from the Association of Polytechnic Teachers.

Mr Neil Fletcher, chairman of the further and higher education subcommittee, last year bluntly refused to consider recognition of the APT as a union representing staff at the Inner London polytechnics.

APT complained when Mr Fletcher, without consulting his committee, told them: "The ILEA has no intention of recognizing the APT either now or in the future... I would advise any members of staff contemplating joining your organization seriously to consider whether their interests can be protected or represented in any significant way by membership of such a misbegotten and unrepresentative association as yours."

The Commissioner for Local Administration in England, Mr D. C. M. Yardley said in his report upholding the APT's complaint of maladministration by ILEA causing injustice that the terms of the letters were "offensive" and prejudged the issue.

When the recognition question in the light of the APT's new seat on the



Mr Neil Fletcher refused to consider recognition

Burnham further education committee was considered by Mr Fletcher's committee, it would have been difficult not to turn down the request because of the public nature of his comments, Mr Yardley found.

The ombudsman said that he felt the injustice could be remedied by an apology from the chairman of ILEA, Mr Gerry Ross, and not from Mr Fletcher. All ILEA would say is that the report would be considered in the next round of meetings in September. The report cleared Mr John Bevan,

then deputy controller of ILEA as another senior officer of alleged maladministration. The APT claimed that the two gave misleading advice to the courts of the Polytechnics of North and Central London on a recognition issue. But the ombudsman upheld a complaint that the APT submission on 16 to 19 education London was not passed on to a review body, although he found it there was no injustice as the time which gave rise to the complaint was rectified.

The APT in London has recognized with its rival the National Association of Teachers in Further and Higher Education, at PNL, hopes to high of an agreement at Thames, but discussions have reached stalemate.

The position is complicated because ILEA is not the lecturers' employer; they are technically employed by polytechnic themselves. But the APT thought it should have recognition from ILEA so that it could take part in negotiations on pensions, superannuation, and conditions of service.

A new headache for ILEA is that APT is determined to secure recognition at a number of higher education colleges outside the polytechnic sector where ILEA is the employer.

Hamilton sale probe

There is to be a Commons investigation into the sale of the former Hamilton College of Education, claimed to have been sold by the Scottish Office to the lowest bidder.

The Commons public accounts committee has decided to mount a full investigation, following a preliminary inquiry into the sale by the comptroller and auditor general.

The college, sold by the government in 1981, was sold for only £68,000, more than £1m less than it had cost to build 14 years previously.

The main college buildings were bought by an English company, Christian Schools, which will open a private school later this month. The Edinburgh firm, Miller Homes, bought the residences intending to convert them into luxury flats.

But two unsuccessful bidders, who made offers for the entire college complex, claim their bids were higher than those accepted.

At the time of the sale, local MP Mr George Robertson, condemned it as "political incompetence compounded by malice".

The public accounts committee will begin its investigation on November 16.

Commission draws up new craft offensive

A major investigation of recruitment to craft design and technology teacher training courses is being launched by the Equal Opportunities Commission next month.

The investigation is to be undertaken by the commission's chairman, Baroness Platt, and its commissioner, Michael Fuller who are to seek the cooperation of teacher training institutions when preparing recommendations.

and called for positive steps to increase their number, as well as common courses in CDT for all girls and boys up to the age of 14.

The report was prepared by a special working party set up to discover why so few girls followed CDT courses at secondary level. In 1979, over 305,000 pupils took CSE and O level examinations in CDT subjects, and of these only 7,478 were girls, a mere 2.43 per cent of the total.

Amongst 40 proposals made in the report to improve the current position are recommendations that teacher education departments should make special efforts to encourage women on to CDT courses.

It calls on institutions to review their present policies in the light of the following factors: what is the balance of female and male students following each CDT course and what is the balance of female and male CDT lecturing staff?

Of the women and men applying to places on courses, what proportion of each are interviewed and accepted?

There flexibility in the system to allow students who have taken up one of their last years at school their offer of a place in the university if they are considered for a different course under section 47 of the Sex Discrimination Act 1975.

High-energy machine updated to get ahead of the field

by Jon Turney
Science Correspondent

The Science and Engineering Research Council has approved a three-year programme to upgrade the synchrotron radiation source at its Daresbury laboratory, which is widely used by researchers. The £850,000 programme will keep the Daresbury machine on a par with competitive machines now running overseas.

Although the SERC is under heavy financial pressure, it is anxious to maintain the position of the synchrotron source which was the first machine of its kind in the world. The cost will be spread over the next three years and part of the money will be covered by savings when the machine is closed down for six months in 1985 for installation of new magnets. The Medical Research Council has an agreement for a joint experimental programme on it and will contribute to the cost.

Use of synchrotron radiation is a spin-off from earlier work in high-energy physics. Circular accelerators, which push charged particles up to high speed through magnetic fields, generate very intense X-ray and ultra-violet radiation. Formerly, this was a by-product of machines designed for high-energy physics experiments but the Daresbury machine was the first synchrotron designed specifically as a radiation source.

The radiation produced is used in studies as diverse as protein crystallography, materials science, surface chemistry and silicon chip technology. In all these fields the intensity of the radiation offers sharper images at shorter exposure times than conventional sources.

Demand for time on the machine from outside researchers has been high that a large backlog built up. Sir Daresbury hopes this will be cleared before the modifications are made and plan to run the machine 24 hours a day by the end of the year.

Since it was commissioned, similar machines have been built in Australia, Germany and Japan. The SERC plan to increase the intensity of the radiation beam from the Daresbury machine by tighter magnetic focusing. This will ensure UK researchers have access to a world-class facility.



The three Sweet sisters created a unique record at University College, Cardiff, when they all graduated with first-class honours in the same year. Rosemary (left) took a BEd in textiles and design, Heather (centre) a BSc in physiology and Elizabeth (right) a BSc in plant science. All three enrolled in different years but finished together because of a transfer and different course lengths.

Consortium to take over planning exams

by Felicity Jones

A consortium of two polytechnic planning schools and the Open University is to take over the professional examinations of planners from the Royal Town Planning Institute over a phased period.

Three new distance learning courses will be started by the planning schools of Bristol and Leeds polytechnics in January 1985. These will replace the present RTPI examination for students who have studied at home.

A three-month optional introductory course will also be available to those students who are new to degree level study or to planning.

After the preliminary polytechnic courses, students will study for five credits with the Open University from a selection of compulsory and optional courses. The complete package will be the equivalent of eight OU credits at the end of which students will be eligible to become chartered planners.

Consultation still has to take place but it is expected that the institute will give its formal approval by May 1984. It will mean that 1985 will be the last

year that students studying privately can qualify directly through the RTPI exam without having gone through the distance learning package provided by the consortium.

Liverpool Polytechnic's school of planning rescued from closure by an eleventh hour change of political control at the city council has been given a glowing visiting board report by the RTPI.

The report praised the high quality of the courses and "impressive research record" which it described as an excellent example of how a department can "home in" on a planning field relevant to staff experience and interests and geographical location.

It also severely criticized the way in which the courses were threatened with closure by the polytechnic as a "suspected breach of natural justice" in the absence of any consultation with the institute.

The Council for National Academic Awards' visiting board has also given a boost to the school's morale in a favourable response to a report drawn up by the school on its honours degree course.

Brunel students come a long way from the slide rule

by Jon Turney
Science Correspondent

Engineers at Brunel University may be first students in the country who are obliged to buy a microcomputer to follow their courses.

Engineering undergraduates traded slide rules for pocket calculators long ago, and computer-aided design now looks like supplanting the drawing board in go-ahead first. Students at Brunel already make extensive use of CAD equipment throughout the university's special engineering programme.

But even though new students are put in front of a keyboard controlling a highly sophisticated design system of the first week of the four-year course, they still don't have access to a computer enough of the time to satisfy all the demands of the Brunel teachers.

So from October 1984, each of the 44 outside companies which sponsor students on the course will be asked to earmark part of their bursary to buy a microcomputer. The university hoped to arrange this for 1983, but a meeting

of all the companies in July failed to produce agreement on how much they should contribute.

However, the department is confident the scheme will go ahead next year, and plans to buy bulk-bought BBC microcomputers to cope with incoming students. This will ease the pressure on the departments existing Apple microcomputers, as well as their larger machines, and help students master the new techniques at all phases of a design.

Brunel engineers already generate their own computer models and manipulate them on a CAD system by the end of their first term. And by the third and fourth years they have a chance to develop applications of computers in design which rival the most sophisticated industrial systems.

The firms involved should also benefit, as the students will also have access to their own computers when they go on industrial placements. Several Brunel students have already redesigned parts of their employers' computer systems during their six-month stints in industry, and their teachers hope this will continue.

Deaf appeal for teaching cash

The National Deaf Children Society launched an appeal for funds this week after hearing that the Government still has no plans to provide grants for experienced teachers wishing to specialize in this field.

The society, which has been having talks with the minister for the disabled, is angry that the Government is not prepared to change regulations which could dramatically alter the number of teachers for deaf children.

It has argued that many teachers of both sexes are being prevented from taking up specialist training courses at university of college because of financial

difficulties, and that there is a shortage of male teachers in the profession.

This situation is particularly disturbing because it is agreed professionally that it is important for teachers of the deaf to have had experience of teaching hearing children in order to understand deaf children's development in context. Mr Harry Cayton, director of the society, said:

"As a result the society intends to fill the gap by setting up a scholarship which is to be awarded annually to an exceptional teacher wishing to train as a teacher for the deaf."

Overseas news New union wins support with grants victory

The Polish Students' Association (ZSP), set up last November to attract former members of the banned Independent Students' Association (NZS) has frustrated an attempt by the ministry of science, higher education and technology to reduce student grants.

Officially the reduction, planned for October 1, has only been postponed. Opposition from the ZSP came, however, as a considerable surprise to the ministry.

The grants system was established by the Higher Education Act of 1982. From the beginning, many students were suspicious of the grants system, which, they felt, could be used as a means of disciplining students who failed to show the proper political rectitude. In the event, however, students from poor and disadvantaged families were only too pleased to take advantage of the grants.

Under the 1982 Act, changes in the level of grants can only be made with the agreement of the ministry of finance and the supreme bodies of "national student organizations". When the act came into force last September, this meant the party-linked Socialist Polish Students' Association (ZSP), since the NZS had been outlawed in January 1982.

Savary announces boost for technology institutes

from Guy Neave

Over the next six years high priority is to be given to expanding France's two-year university institutes of technology. This development is to be implemented as part of the Ninth Plan announced by M. Alain Savary, Minister of Education, at a recent meeting of the inter-ministry committee for regional planning.

The programme is to be carried out by the ministry of education in cooperation with the national and regional planning delegation (DATAR).

Student numbers in the university institutes of technology are to grow by some 6,000. At present there are about 73,000 students in this sector.

Particular emphasis is to be placed on the development of high technology and improvements in business management techniques. Some 30 new departments will be set up. Among the existing departments which will see a heavy injection of new staff and resources are electronics, biotechnology, production control, heating engineering and management.

The government has been careful to ensure a wide regional distribution of these new resources and the new strategy links in with the long and often painful campaign to decentralize higher education institutions more closely with their immediate community.

Among establishments which will receive immediate benefit from the government's plan are Bayonne in the south west, Calais and Orleans where

However, during its national congress the ZSP dissolved itself, and reconstituted as the ZSP - dropping the word socialist and opening its ranks to students of "various world-outlooks" - i.e. aiming at the plurality promised in the Solidarity era.

Shortly afterwards it was claimed that the ZSP had not dissolved after all - it had merely "suspended" its congress to allow the ZSP a chance to get established, and would remain in existence as a small group of party-minded activists. Nevertheless, the hoped-for deluge of recruits failed to materialize; former NZS activists boycotted the new organization, and the majority of students remained passively unimpressed.

In April, the ministry of science, higher education and technology decided to reduce the maximum grant from 8,700 to 6,500 zloty, and to offset this by reducing charges in halls of residence and canteens. The ministry of finance agreed, as did the various party-linked youth organizations, including the ZSP. The ZSP, however, stood out.

According to Warsaw radio, the proposed changes were necessitated by the large number of students who had opted out of living in halls of residence or eating in canteens.

the computer science departments will be strengthened. At Rouen and Nancy electrical engineering is to be given a further boost.

This response is a direct offshoot of a speech made by President Mitterand. In April, the president gave the go-ahead for doubling the number of places available in the high technology area of the university institutes.

It remains to be seen whether the institutes will draw sufficient numbers of students. Unlike the universities, they are highly selective. In addition to holding their *baccalauréat*, students have also to submit a record of their last two years of school.

The drop-out rate at the two-year institutes is far lower than at the universities, but successive governments since 1966 have been bothered by the reluctance of students to apply in the numbers called for.

Far more discouraging is the fact that the higher technicians' sections - the post-secondary classes attached to some 623 technical *lycées* - have flourished over the past five years. Ironically, the planners saw the university institutes of technology as replacements for the higher technicians' sections.

During the year 1981/82 the number of entrants to the higher technicians' sections leapt by more than 10 per cent. Whether the availability of new places in the university institutes of technology will tempt school-leavers away from the technicians' sections is a matter of speculation.

Peace plan approved

A senate panel has approved legislation to establish the US Peace Academy, after having assured that the school would not compete with existing institutions or become a site to launch criticism of US foreign policy.

The Bill would authorize the expenditure of \$7.5m for leasing and renovating a campus, yet to be determined, and \$16m for operations during 1984 and 1985.

A quarter of the academy's annual government appropriations would be parcelled out to grants and contracts at other colleges and universities to emphasize its complementary role, according to amendments.

The senate labour and human resources committee also amended the Bill to add the secretary of defence, the secretary of state, the director of the arms control and security agency, the chief of the National Defence University to the new academy's 15-member board of governors.

Minority aid backfires

Affirmative action has backfired, says a new study by Duke University, North Carolina, resulting in a decline in teacher quality because the best women and black candidates are attracted to better paying jobs in other fields.

The study, published in the July issue of the journal *Educational Researcher* culled data from a survey of 58,270 secondary students in 1,015 American schools in 1980. Researchers with Mr Ellis Page, professor of educational psychology and research at Duke and former president of the American Educational Research Association focused on 688 graduating students who said they planned to become teachers and 10,411 others who looked forward to careers in other areas.

"Now it appears that affirmative action, while creating opportunities for women and minorities, may drive off some teaching talent to professions with higher rewards," said Mr. Page.

The mature student who hardly stood a ghost's chance



from Geoff Maslin

MELBOURNE
A phantom Tasmanian adult has been used to test the willingness of Australia's higher education institutions to accept older students. But most of the institutions failed the test. Indeed, the wonder is not that there are so many mature students in Australian colleges and universities, but that there are any at all.

More than one in seven of the institutions surveyed did not bother to reply to an inquiry regarding enrolment from a fictitious adult Tasmanian who supposedly was a prospective student. Others took up to 11 weeks to respond and even then many of the replies were distinctly discouraging.

A privately run agricultural college in Geelong brought glory to Victoria by topping a national list with a "willingness" score of 95 per cent. Unfortunately, La Trobe University in the same state was down the bottom with a zero for not responding at all and Monash University got only 20 out of 100 because it took 72 days to send off a curt note.

Only 18 of the 39 institutions which did reply passed the test.

The survey was conducted by the North West Council for Community Education in Burnie, Tasmania. A letter of inquiry was sent to 46 universities and colleges from an imaginary adult with a not quite successful record in mathematics and science in final year

examinations at secondary school level, but several years' work experience in the field of finance.

The prospective student indicated he was moving to the area of the institution early in 1983 and wished to inquire as to his eligibility to study there.

All the letters were sent on the same date early this year and were virtually identical in wording. The returns were scored out of 100, based on three different aspects: time to reply; tone of reply; and the amount of information given.

Up to six days' reply time was set aside to allow for the vagaries of Australia's post. But distance did not seem to be a factor since the first letter back came from the Darling Downs

Institute of Advanced Education in Queensland, while the University of Tasmania had not responded after 10 days. The director of the north-west council, Dr Mike Walker, said a person's first encounter with a bureaucracy always left a lasting impression and the way some institutions reacted to inquiries was enough to leave an undecided adult from enrolling.

"Satisfying the deceptively easy needs of a potential student who tests the administration of some institutions in this country," Dr Walker said. While federal and state governments were exhorting students and adults to enter higher education, the system seemed designed to make this as difficult as possible.

Indian medical watchdog to get more teeth

from A. S. Abraham

BOMBAY

The Indian Medical Council is apprehensive about an imminent move by the federal health ministry to increase its influence over the council through the nomination by the ministry of the IMC president. At present, the president is elected by IMC members.

The proposal for nominating the president is part of an ordinance broadly aimed at giving the IMC greater powers to monitor the growth and standards of medical education. The ordinance has been drafted by the health ministry in consultation with the law ministry. It will be replaced by legislation in parliament within six months of its promulgation.

The health ministry seems to feel that since, under the new dispensation, the IMC will be given more powers, it should surrender part of its autonomy as the price. IMC sources say the price is too high.

The IMC will be empowered to stop the proliferation of new, sub-standard colleges as well as to ensure that those in existence do not fall below a minimum level of performance. No college will be able to start functioning without its consent. At present, its role is confined to ensuring that those about to graduate have acquired the basic medical knowledge and skills.

It will also be authorized to recognize individual medical colleges, a power now in the hands of the affiliating university. Any new course will also need the IMC's sanction before it can be introduced.

A major and potentially controversial provision in the ordinance is that empowering the council to fix the fees that any medical college can charge anywhere in the country. This is aimed at ending the levy of extortionate capitation fees by private medical and engineering colleges.

Until now, abolishing this (mal) practice has been left to the provincial governments, with New Delhi confining itself to persuading them to do so. While most states have been loath to take action, two southern states, Karnataka and Andhra Pradesh, both ruled by parties opposed to Mrs Indira Gandhi's Congress (I), which is in power in New Delhi, have recently gone ahead.

Andhra Pradesh has fixed the fees, these colleges can charge and, after reserving one-fifth of the total number of seats for Untouchables, tribals and "backward classes" (castes held to be economically vulnerable), has stipulated that the remaining 80 per cent must be filled strictly according to rank.

In Karnataka, the picture is more complicated. The provincial government has fixed a uniform tuition fee and a variable 45 per cent of the seats in all the state's medical colleges for "merit students", while allowing management a quota of their own, subject to a portion of this quota being reserved for students from the state. These students would have to pay a refundable deposit of about 23,000, a large sum of money.

But nothing has been done to ban capitation fees in the state's engineering colleges since they have gone to the supreme court challenging official government fees. In the meantime, an ordinance has been issued prohibiting capitation fees in new institutions.

Province set to axe tenure

from Mark Gerson

TORONTO

Tenure for college and university faculty could be abolished in British Columbia if the provincial legislature passes a series of government measures now before it.

The Public Sector Restraint Act, one of 26 bills tabled at last month's budget, removes job security throughout the government service and allows one current contract to expire. At the same time, programmes and agencies designed to protect human rights in the province are to be cut back or disbanded.

Four hundred civil servants have already been sacked, and the bill would simplify government plans to trim its direct and indirect payroll by 25 per cent over the next few years.

A second bill, the Public Service Labour Relations Act, would severely restrict the scope of contract discussions, leaving only wages and benefits subject to negotiation. Job security and working conditions would no longer be negotiable.

Universities are still studying the vaguely worded bills to determine their precise impact on operations. Nearly everyone agrees that the tenure and job security provisions apply to univer-

sities, but there is some question about the cabinet's right to order changes to curriculum and institutional structure. No such uncertainty exists at the province's community colleges and technical institutes, where board members could be fined up to £1,050 apiece for disobeying such cabinet directives.

"My goal is eventually to cut the cost of government," Premier Minister Bill Bennett said after a Social Credit Party victory was returned to power in May 3 provincial election. His July budget gives universities no increase in operating funds for 1983/84 and reduces spending on student aid.

According to the Canadian Association of University Teachers, the government's restraint package is "a smokescreen" for a "most ferocious attack" on civil rights. It places public servants and teachers "at the mercy of gossip, vendetta and political malice."

University presidents in British Columbia have also reacted strongly to the legislation, which they see as an unwarranted attack on university autonomy and academic freedom.

Because it allows the government to intervene in the areas of freedom of speech and thought, the legislation is dangerous to a university and dangerous to the society universities serve," said George Ivany, acting president of Simon Fraser University, in a letter to

Universities Minister Patrick McGeer. George Pedersen, president of the University of British Columbia, worries about attracting and keeping good scholars and teachers "if we seem to be the only political jurisdiction in North America to have abolished tenure for faculty."

Telegrams of protest from around the world have expressed similar fears. Diana Warwick, general secretary of the Association of University Teachers in Britain, reminded Mr Bennett of the need for independent teaching and research that is "free from partisan political considerations". Abolishing tenure, said Irving Spitzberg, general secretary of the American Association of University Professors, would "put at risk the quality of your universities and weaken the safeguards of academic freedom that are essential to British Columbia and Canada."

Although prevented by provincial law from unionizing, faculty in the province are considering a solidarity committee created by the British Columbia Labour Movement to coordinate a massive public awareness campaign and legal and constitutional responses to the legislation.

Count challenges are already being discussed and are expected to use the bills' many technical loopholes, as well as sections of Canada's new Charter of Human Rights and Freedoms.

College's sale and lease-back scheme upsets tax critics

from E. Patrick McQuaid

WASHINGTON

A scheme to sell the campus of a small New England college and then lease it back from private investors as a novel way out of its financial predicaments was denounced as a tax shelter by a legislative committee. It places public servants and teachers "at the mercy of gossip, vendetta and political malice."

The bill addresses all colleges and tax-exempt organizations but the most frequently cited target of the measure is Bennington College, in Vermont. Bennington officials planned to sell the college's campus and then lease it back from them while realizing a \$2m profit.

Under the House provisions, a college would be able to sell and lease back old buildings if the money was used for rehabilitating the properties. Similar legislation is pending in the Senate, where a special financial panel has heard testimony from a dozen higher education groups.

Mr Daniel Bratton, the president of Kansas Wesleyan College, spoke on behalf of the American Council on Education, representing 11 other secondary organizations. "Sales and lease-

backs of existing buildings should be curbed where the transaction serves no purpose other than the generation of tax savings shared in part with the institution," he said.

Mr Bratton did not refer specifically to the Bennington plan, which is in abeyance - but commented that such arrangements "may produce additional dollars for the tax-exempt institution, but they do not directly further its productive function."

Bonington's president, Mr Michael Hooker, sees matters differently. "It is ironic," he told the Senate panel, "that a college could not benefit through reduced costs by selling its building to investors and leasing it back, but any college that owned its own building could do so."

He admitted that the scheme "is a use of a tax loophole, and I am embarrassed to be doing it."

Bennington has accumulated a \$2.5m debt, an amount equal to its endowment. Its lease-back arrangement is a first for an American college but elsewhere, municipalities have benefited from similar "gimmicks," as Senator Howard Mendenhall of Ohio calls them. The city of Baltimore sold and leased back a fire station and an incinerator and the city of Oakland, California, made a similar deal with its coliseum and public museum.

Greenland to get mini-university next year

from Annette Hopson

COPENHAGEN

Greenland will open its first mini-university, to be called the Inuit Institute, in January. To begin with only 14 students will be admitted.

Greenland's director of education, Mr Augustas Møller, said at a press conference in Copenhagen that the intention to offer the first mini-university was to help the Inuit people in the south-west of Greenland. After two years, the students will continue their studies at universities in Denmark.

The admission conditions will be the same as those in force to enter a university in Denmark, except that the students' mother tongue must be Greenlandic. The institute will be led by professor, Dr Bakompol, Mr Robert Petersen.

Professional bid to reserve a seat



Joining for reserved places on the TUC's general council: Diana Warwick (left), Alan Sapper and Bill Sirs

If Diana Warwick's attempt to win a seat on the TUC general council proves successful, it will be the first time a professional has been elected to the body. The director of the north-west council, Dr Mike Walker, said a person's first encounter with a bureaucracy always left a lasting impression and the way some institutions reacted to inquiries was enough to leave an undecided adult from enrolling.

Two things have changed: the domination of the general council by the industrial unions was already being eroded by the phenomenon of white-collar trade unionism and this has given the AUT its chance of a seat. Also the AUT itself has come to see the significance of the wider trade union movement and its potential as an opinion-former at the first stages of policymaking.

Early surprise that Ms Warwick should be trying for a seat so soon after her controversial appointment as general secretary less than a year ago is now being diluted. Many observers think that she has a real chance of winning one of the 11 seats specifically reserved for unions with fewer than 100,000 members, and that even if she fails the effort will have been worthwhile in putting the AUT on the map.

The arcane processes of electioneering within the TUC and the left and right slates which are supposed not to exist are expected to be less significant in the election for the 11 reserved seats than had earlier been thought likely.

Other factors are going to come into play - and Ms Warwick is likely to benefit from them. The real nature of the struggle will not become fully apparent until after the last moment for nominations to be withdrawn, which is reached today. She does not appear on the left-wing slate, which earlier this month was too full with 12 names. The right-wing slate, whose disclosures two years ago provoked a serious row within the National Association of Teachers in Further and Higher Education when its general secretary's name appeared on it, still has two vacancies.

Ms Warwick, very much a moderate in TUC terms, could fit into one of those slots - and it was being pointed out that the right would enjoy a significant tactical advantage by including a woman.

She is the only woman among the 31 candidates for the reserved seats, and only one woman, school dinner worker Mrs Lily Stevens of the National Union of Public Employees is to hold one of the seats for the larger unions.

Of the 31 candidates, almost a dozen are from "white collar" unions, many like the AUT are taking advantage of the new constitution to stand candidates for the first time. It is likely that a large slice of the reserved seats will go to people now on the general council whose unions fall within the less-than-100,000 bracket. Prominent among these is Mr Bill Sirs, of the Iron and Steel Federation, whose union membership figures have dipped below the cut-off point.

But despite the declared intentions of the right it is expected that most of the incumbents, who tend to be regarded as left wingers, will retain their seats. They include Alan Sapper, brother of Ms Warwick's predecessor at the AUT. A handful of seats will be up for grabs and it is one of these Ms Warwick is chasing.

Interestingly, the National Association of Teachers in Further and Higher Education is not trying for a general council seat this year, although its 76,000 membership puts it in a strong place for the vote on reserved seats.

Its general secretary, Mr Peter Dawson, stood unsuccessfully in 1981 amid considerable internal dissent about the way his nomination went forward

Putting a computer on every office worker's desk is only half the story of information technology. If computers are to be truly useful they must be able to talk to one another, often at great distances. This is the goal of a widely admired British academic-industrial collaboration now nearing the end of its first phase. As the project involves linking a number of ground networks by satellite relay, the sponsors call it the Universities Expanded Ring and Satellite Experiment, giving the irresistible acronym UNIVERSE.

A project with such an immodest title had better be good. And UNIVERSE is a success both technologically and in establishing a new model for broad-based cooperation between government, industry and universities. It involves three universities - Cambridge, Loughborough and University College London - and three different companies, together with the Science and Engineering Research Council and the Department of Industry. The fact that all three companies - GEC-Marconi, Logica and British Telecom - are gearing up for phase two of the project augurs well for much larger efforts to promote such collaborations like the Department of Industry's Alvey programme for advanced computer research.

The idea for the project grew out of two earlier, academic-based experiments, one at Cambridge and one conceived by the SERC. Cambridge's contribution was a design for a local network system for linking computers. The Cambridge ring is a kind of ring main for information installed in a building with a number of computer users. The ring itself is computer-controlled, and the system labels each item of information fed into the network so that it is recognized at its destination. This itself is a complex programming and design problem, and when several such networks are joined together the controls which ensure the right information gets from computer A to computer B must be extremely reliable.

UNIVERSE links a whole series of Cambridge rings at six different sites by using satellite relay technology first developed by the SERC to link researchers at widely separated laboratories. The project uses small dish-shaped satellite antennae on the ground. Each one can beam information up to the European Space Agency's orbiting test satellite 26,000 kilometres above the equator. The satellite then rebroadcasts the signals to all the other ground stations.

The beauty of the satellite link is that it can transfer information over long distances as fast as it moves around the individual Cambridge rings. And that is very fast. A conventional telephone line can only relay around 150 characters of text per second. Both the local area networks and the satellite relay used in UNIVERSE can carry hundreds of thousands of characters per second.

This means that the 150-odd separate computers in all the different laboratories tied into the system can be instructed to work on the same problems. A programmer at, say, Loughborough, can use a computer in Cambridge as conveniently as if it were wired into a desktop terminal from the next room. When this type of network develops on a larger scale, quite modest machines will be able to learn on larger computers many miles away to tackle problems outside their own capacity.

The speed of the network also makes it suitable for sending television pictures or documents which have pictures and diagrams as well as words. Adapting the system for television pictures is Loughborough's part of the project. And University College is experimenting with the possibilities for document transfer. The London team is particularly interested in the prospect such networks may offer of developing new ways of packaging information - mixing speech, pictures and text in novel "electronic documents". Both teams stress that while the main elements of the system are very sophisticated, only a small computer is needed to gain access to the network and pull data from stores at a remote site. To prove it, they both use the BBC microcomputer advertised in every colour supplement as their general purpose display machine for use with UNIVERSE.

However, the sponsors have not put up £4m over three years just to help university researchers send pictures to one another more quickly. The main motive for the project is commercial - to help develop British equipment for a market expected to grow up in local

Let your fingers do the talking

and global computer networks. Logica hopes the Cambridge ring will outperform other candidates for local area networking and GEC-Marconi has an eye on the sales of satellite dishes. As most medium-sized companies will soon have a host of computers which need access to the same data and must return results to a central store, the ultimate market for fast networking should be highly lucrative. The Department of Industry hopes the two companies can turn the academic ideas embodied in this market. One factor on their side is that the Cambridge ring is suitable for use with fibre-optic cables, carrying light signals instead of the electrical pulses which travel down conventional copper cables. These should be directly compatible with the fibre-optic links British Telecom is now building into the telephone system.

Experiments with encryption are another feature of the project incorporated with an eye to future commercial appeal. In a university, it doesn't much matter who gets hold of information entrusted in the network, provided that a message without too many errors reaches the desired destination. But a potential business user of a shared network will want to know that there are safeguards against unauthorized access. So the packets of data need to include codes to prevent prying computers getting at the contents.

For once, the project appears to have given Britain a lead in a crucial area of new technology, certainly in Europe. The funding for phase one of the project ends in April next year, around the time the test satellite is expected to

pass out of use. But plans for a more ambitious second phase are already taking shape.

John Burren, the team leader on the project at the SERC's Rutherford-Appleton Laboratory, said that phase two was unlikely to involve any other universities, but at least two new companies had asked to join. The main difference in the second stage will be a tie-up with new, very high-capacity land lines now on offer from British Telecom.

The next phase will use land lines as the core of the system, retaining access to a satellite for experiments. The advantage of the satellite is that anyone with a dish receiver can link into the system. And in a few years networks like UNIVERSE will use the new European Communications Satellite.

In the meantime, phase two will concentrate on commercial development of working systems. According to John Burren, much of the phase one work had to be done in a hurry because there were only 18 months of research time left after the network was set up. The job now is to get complete networks set up and working reliably.

The industrial partners will probably put in a larger share of the money for the next stage, and Burren emphasizes how successful the project has been as a new kind of academic-industrial collaboration. University researchers and commercial companies have different goals and outlooks and are used to different timescales that getting a joint project as complex as UNIVERSE off the ground is quite a feat.

There are several other areas of high-technology where much of the British know-how resides in universities - and in some, like remote sensing and artificial intelligence, the stakes may well be higher than in computer networking. Similar collaborations will be needed to develop commercial ideas in these fields, so UNIVERSE could well set a pattern for future sponsorship of pre-competitive research. The Department of Trade and Industry and the SERC may well go to other universities and ask why they are not doing the same kind of thing.

Jon Turney

EDUCATIONAL COURSES REVIEW

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Marking the passing of an exam

At any given time there are a lot of minor ideas floating about for practical innovations. They are talked about in pubs, written up in the Sunday papers, entered for inventors' competitions, posted in works suggestion boxes. In most cases they consist of a novel combination of familiar components and their performance is determined by known laws. This means that their performances are predictable given the right data and the appropriate mathematics. In 1974 my colleagues and I started a course in applicable mathematics for sixth formers based to a large extent on the use of mathematics in this way. It led to GCE examination in applicable mathematics which used the analysis of a minor innovation of this sort as a vehicle for assessing the candidate's grasp of mathematics.

Our first paper explored the mathematical implications of inflatable bumps on motorways. It appeared that these might be a valuable way of countering motorway madness in fog; but could one be sure? The kind of questions we might use mathematics to answer were:

● How long would the bumps take to inflate?

● When the bumps began to inflate, how soon would the driver notice visually?

● How soon would the driver become aware of the joggling of the car?

● How violent would the joggling be?

● Can one get the bumps up to a level where the average driver will notice, before the fog comes down to a dangerously low level of visibility?

● Nine years later our last paper, taken at the end of June, has been an analysis of an anti-mist system for glasses, i.e. preventing cold glasses from steaming up when the wearer enters a warm, humid room.

The use of mathematics like this in a sustained way, to build up a picture of the predictable consequences of an idea, is called "mathematical modelling". This particular kind of modelling, where the reality we are trying to understand does not yet exist, is often called "projective" modelling, because the situation it illuminates has to be projected into the future. The great advantage in using a scenario of this kind to assess whether pupils have mastered their mathematics is that it does just that. It sorts out the mecha-

Since 1974 a GCE paper has been set each year based on the concept of mathematics as an innovation-exploring medium. The papers have consisted of structured sequences of questions probing the predictable implications of an innovative practical idea. Last month, the final paper was taken by 90 candidates; the examination has been killed off by the clamour to reduce variant maths syllabuses. Below, CHRIS ORMELL, who designed the examination, describes what it tried to do.

nical memorizers from those who have really understood. These examinations provide an opportunity to see how candidates cope when presented with a real problem: that of assessing the implications and overall potential of an idea.

It should be said at once that this kind of examining in a relatively academic part of the curriculum is a new departure. These exams are not simply slight variations on customary examining practice, but a different objective, namely, that of assessing the degree of fluency candidates can achieve in thinking themselves into and out of mathematics as applied to a specific real problem.

Unfortunately when the clamour went up about three years ago to reduce the number of different syllabuses in mathematics they were treated as if they were just another slight variation, and pressure was brought by the examining boards to try to squeeze the applicable mathematics examination into a standard examining mould. This is the essential reason why the examination has now come to an end. It shows the all-too-familiar picture once again: our national talent for suicidal opposition to the inventiveness which we need to survive.

Whether the battle to save the examination could have been won is a matter for conjecture. It is, after all, to the credit of the GCE boards that they began the experiment in the first place. It should be said that when the issue of the future of the examination was discussed by the advisory panel of the board which handled the examination it was usually able to enjoy the support of a majority of the board's panel. It was only after the issue was referred to technical discussion with examiners in sub-committee — a sub-committee which was set up with a preponderance of experts opposed to or unimpressed by the examination — that the impos-

ibility of compromise became evident. There are many examiners who feel that an examination which assesses for interpretive understanding of mathematics contradicts the existing mainstream practice of examining in some respects. It does, of course. There is a strong argument for adopting a major element of this kind of assessment throughout our examining of mathematics, especially in schools and non-specialist higher courses.

The argument is that technical virtuosity within mathematics has lost some of its importance in an age in which software can provide the non-specialist with an amazing range of sophisticated mathematical services. What becomes increasingly important, however, is that the user of such services — i.e. the non-specialist user of mathematics — should understand how to convert real problems into mathematical form, should understand what mathematical processes achieve and the assumptions on which they rely, and most importantly, should be practised in interpreting mathematical results in ordinary language. These were the aim of the now extinct examination, though they were implemented, of course, only in relation to one particular sector of sixth form non-specialists.

Similar arguments apply to the course which led to the examination. This was designed on the premise that non-specialist sixth formers who intended to proceed to higher education needed to keep their mathematics ticking over in the sixth form. Research shows that mathematics, once discontinued, was very quickly forgotten by the average student. Indeed the overall picture was that students who discontinued the study of mathematics tended to regress in their knowledge and understanding of maths to the point they had reached two years before they stopped. This meant that sixth formers who gave up mathema-



tics at 16 tended to regress to a "mathematical age" of 14.

But such sixth formers, on leaving school at 18 and proceeding to university, polytechnic or college of higher education, were apt to find that there was a mathematical component facing them in every area of higher study. Every subject had its mathematical models, its quantifications of abstract "parameters", its "constraints", its statistical analyses and computer programmes. It was this tendency of higher education to ambush the non-specialist student mathematically that the applicable mathematics course was designed to prevent.

One would have expected that the force of this argument would have been widely recognized, especially by tutors in higher education: that they would have exerted a pressure on the schools to ensure that sixth formers did keep their mathematics ticking over, preferably in a modelling form. When the teaching guide to the course was published in 1979 it was thought so important that it was reviewed, so far as I am aware, in only one journal. Part of the explanation may lie in vested interests: applicable maths in the pre-Cockcroft era was widely regarded as a second-grade affair. Part of the explanation may lie in the general

rejection of the fruits of the curriculum development of the period beginning in 1957. (This is ironic because the roots of the thinking underlying the applicable mathematics course lay in sustained criticism of the imbecilities of "New Maths". Part of the explanation, I suspect, is that many people at all levels of the system were too drunk with day-to-day problems to be able to devote any sustained attention to long-term solutions.)

It might be thought, then, that June 28 1983 was a particularly black day for progressive opinion in mathematics education. It was. There are few signs at present of an awakening of the slumbering giant, in the sense that science — and technology-based civilization must nurture the interpretive side of mathematics education, if the system is to survive, and yet link urgency appears to operate in this sector for this cause.

I think it is obvious to any intelligent unbiased person that the battle fought over interpretive mathematics in the late 1970s will have to be refought, and won, if we are to make progress in preparing our best students for this micro-saturated age.

The author is a senior lecturer in education at the University of East Anglia.

BOOKS

'The years incline me to stern prose'

by D. J. Richards

Alexander Pushkin: complete prose fiction
translated by Paul Debrezeny
Stanford University Press, \$38.50
ISBN 0 8047 1142 9
The Other Pushkin: a study of Alexander Pushkin's prose fiction
by Paul Debrezeny
Stanford University Press, \$32.50
ISBN 0 8047 1143 7

In the poet's homeland today no doubts linger over Pushkin's role in the history of Russian literature. He forged the modern Russian literary language; he produced sparkling works in all genres — lyrics, narrative poems, plays, short stories, novels and even letters — which stand as models of elegance, power and sensitivity; and the advanced techniques which were taken up and developed by his literary successors over the following century and a half.

Not that it was always so. In the 1860s the nihilist critic Pisarev dismissed Pushkin as "a frivolous versifier... immersed in the contemplation of trivial personal sensations and quite incapable of analysing and understanding the great social and philosophical questions of our age...". Half a century later the futurists proclaimed that Pushkin, along with Tolstoy and Dostoevsky, should be "thrown overboard from the steamship of modernity", while in the early days of the Soviet regime the crudely iconoclastic members of *Proletkult* argued that Pushkin's work was at best useless and at worst positively harmful in the new era. At this same time, however, Lunacharsky, the People's Commissar for Education in the RSFSR and other more cultured Bolsheviks were propounding that Pushkin was a literary giant of world stature whose achievement was still of significance and value for twentieth-century socialists. Fortunately, this was the view which was to prevail in the Soviet Union.

Outside Russia, however, Pushkin's reputation is far less secure — or rather, in comparison with his later nineteenth-century compatriots, Turgenev, Tolstoy, Dostoevsky and Chekhov, he has long been almost unknown. True, in the English-speaking world the position is gradually improving. Recent years have seen several spirited translations of Pushkin's work and one or two solid critical assessments of his achievement. The most enterprising of the former — with all their defects — are the three versions of *Eugene Onegin* by Vladimir Nabokov, Walter Arndt and Charles Johnston, while the best of the latter are John Bayley's *Pushkin: a comparative commentary* (1971) and Antony Briggs's *Alexander Pushkin: a critical study* which came out earlier this year.

These dedicated promoters of Pushkin are now joined by Paul Debrezeny, to whom all English-speaking devotees of Russian literature must be doubly indebted since with his two companion volumes *Alexander Pushkin: complete prose fiction* and *The Other Pushkin* he has contributed to the cause both as a translator and as a scholar.

Complete Prose Fiction is what its title claims and more. Professor Debrezeny has provided splendid versions of all Pushkin's stories and novels, from the unfinished *Negro of Peter the Great* to the wayward *Quetzalcoatl* fragments such as *The Tale of Roman Life* and *A Russian Pelham*. Then, for more than good measure, he adds the first-ever English translation of Pushkin's impressive piece of research into the Russian eighteenth century, *A History of Pugachev*.

The translations are accurate and fluent. Professor Debrezeny has adhered very closely to the Russian text, reproducing many of Pushkin's verbal eccentricities and even following his at times eccentric punctuation. This procedure would not work with all



Alexander Pushkin

authors and all translators, but here it produces page after page of unforced English which is a pleasure to read. No one has provided better renderings of Pushkin's prose.

The Other Pushkin, an equally impressive and welcome book, is a scholarly guided tour through the works offered in *Complete Prose Fiction*. The critic looks at Pushkin's work from various angles. He examines the background to the fiction, Pushkin's process of composition and his evolving style, the complexities of his plots, the writer's comments on his own work and his contemporaries' attitudes to it. He rehearses again how some of Pushkin's stories anticipated masterpieces of later Russian literature, such as *Crime and Punishment*, with its echoes of *The Queen of Spades*, and *War and Peace*, which follows *The Captain's Daughter* in setting a fictional family chronicle against the background of a crucial period in Russian history. Beyond this, Debrezeny shows how Pushkin's fictional methods led to a lyrical realism which was to become the distinguishing tone of much Russian nineteenth-century prose.

Professor Debrezeny also sets Pushkin in the wider European context, demonstrating how the Russian's fiction was influenced by writers as varied as Voltaire, Sterne, Hoffmann, Scott and Stendhal. Although he never travelled abroad, Pushkin was the most cosmopolitan of the Russian men of letters and — ironically for the one acknowledged by his fellow-countrymen as their national poet — in some respects the least Russian of them all. The most early nineteenth-century Russian aristocrat, Pushkin was brought up to speak French as well as Russian, and throughout his life he continued the practice of reading French literature which he had begun as a boy in his father's extensive library. As one might expect, the influence of the French language on Pushkin's prose was considerable. Gallicisms occur in his Russian and the structure of his sentences was so conditioned by French patterns that when Prosper Mérimée translated *The Shot* and *The Queen of Spades* he found that whole paragraphs were straight into the native language. One of Pushkin's first models as a prose stylist was Voltaire, while the Russian's most mature prose work, *The Queen of Spades*, shares many things in common with Stendhal's

Le rouge et le noir which he greeted with great enthusiasm when it came out in 1831.

Of course Pushkin was not primarily a writer of prose. He began his literary career as a poet, turning to prose only later in his short life. Oddly enough, it was his poetic masterpiece *Eugene Onegin*, on which Pushkin worked from 1823 to 1831, which marked the writer's move towards prose. Although the work is in verse he calls it a novel; his subject-matter is contemporary Russian manners; the death of the romantic young poet Lensky at the hand of the prosaic Onegin seems to reflect the outcome of tendencies within Pushkin himself; and at the end of the very chapter depicting Lensky's departure from his own "light youth" in terms which are literary as well as personal.

The years incline me to stern prose. The years drive playful rhyme away.

At almost exactly the time he penned these lines Pushkin was completing his first serious attempt at prose, the six chapters of his unfinished *The Negro of Peter the Great*. This was not the first prose he had ever committed to paper: he had worked on two novels as a schoolboy, produced a number of prose fragments in the early 1820s and had long been a most dashing and polished letter-writer in both French and Russian. Interestingly enough, in 1825 Pushkin urged Bestuzhev-Marmarsh to try his hand at a novel and advised: "Write it with all the freedom of a conversation or a letter..."

Pushkin had certainly thought hard about the problems of prose-writing long before the late 1820s. Indeed, as early as 1822 he had drafted the article containing his best-known formula: "Precision and brevity — these are the two virtues of prose. It demands matter and matter — without that brilliant expressions serve no purpose. In this it differs from poetry."

This was the starting point for Pushkin's style of *The Negro of Peter the Great*, a style whose balanced, dense and aphoristic qualities stand out clearly in the second paragraph of the work's opening chapter.

All historical records show that the frivolity, folly, and luxury of the French of that time was unrepentant. No trace was left by them of the last years of Louis XV's

reign, which had been characterized by fastidious piety at Court and by a grave tone and decorum. The Duke of Orleans, whose brilliant qualities were combined with faults of all kinds, did not possess, unfortunately, one modicum of hypocrisy. The orgies at the Palais Royal were no secret in Paris, and the example was contagious. Just then Law made his appearance on the scene, greed for money was united with thirst for amusement and dissipation; fortunes went to ruin, morality perished; and the French laughed and calculated, while the state was falling apart to the playful tunes of satirical vaudeville.

But this was not the end of the matter. As Paul Debrezeny shows, the Russian author modified and refined his original approach to prose almost with each succeeding work. In the first place he relinquished the objective and omniscient manner of *The Negro of Peter the Great* in favour of a series of more or less naive fictional narrators. In *The Captain's Daughter*, narrated by the artless Orlov, the device is used quite straightforwardly, but in *The Tales of Belkin* it approaches self-mockery. The five stories in the volume are ascribed to four narrators of varied social position and literary taste, but are said to have been recorded in manuscript form by an uncomplaining scribe (Belkin) and finally introduced to the reader by a publisher who signs himself "A.P." But even "A.P." cannot be wholly identified with Pushkin, and so the reader of *The Tales of Belkin* finds himself of several removes from Pushkin himself and confronted with a set of Chinese boxes.

Secondly, as his interest in characterization and in presenting the psychology of his heroes deepened, Pushkin found it helpful to incorporate into his "stern prose" some of the techniques of poetry — allusions, symbols, juxtapositions and even repeated rhythmic phrases like: "the *volka, senyorka, iz*", which echoes through *The Queen of Spades*. This last work is the most successful example of Pushkin's mature prose fiction, combining as it does a simple plot with a highly complex, the malleable structure and a profound psychological analysis of the hero.

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Michael Barratt Brown argues that the advantages of residential accommodation outweigh the costs.

Taking shelter under one roof

Residential education is under attack. It is not surprising: it is very expensive. There are what are called "hostel accounts" as well as tuition fees involved. Of course universities, and polytechnics too, have always sought to provide halls of residence for a large proportion of their students. It is only their poor relations in the long-term residential colleges of adult education who are under primary attack.

There are eight such colleges in Britain with about 1,000 beds. Their students, if they are on long courses of a year to two years, receive bursaries from the Department of Education and Science which cover a part of the accommodation charges and fees and a bar subsistence for the students and their families. The eldest of these colleges in Ruskin College in Oxford, founded in 1890, the youngest, is Northern College near Barnsley, founded in 1978. There are colleges in Scotland and in Wales; in Birmingham, Loughborough and London (an all-women's college), two in Oxford and the one near Barnsley.

The main financing of these colleges was taken over by the Department of Education and Science and by the Scottish and Welsh Offices after the Second World War from the trade unions, local authority and voluntary funds which they depended on before. Only the last-named, Northern College, depended mainly for its finance on voluntary funds, although its long courses students receive state bursaries for their fees and accommodation charges and for their personal and family maintenance. The aim of all the colleges is to offer a second chance at education for those who dropped out of the system at the statutory school-leaving age, or a first chance for those who never really entered the system.

But neither is said in the DES that cheaper, or rather more cost-effective, leavers' colleges have been established for students for university and polytechnic

entry. The Open College system in Lancashire, the Open University, the Workers' Education Association, unless extramural department courses and A level courses in colleges of further education, all succeed in doing this job for adults without the prohibitive cost of residential provision; so it is said.

Why residential then? The first reason must take us back to the founding of Oxbridge (and Scottish) colleges in the Middle Ages as communities of learning within the church. Though the connection with the church was broken at the end of the last century by the Redbrick foundations, the principle of a community living and working together was retained and copied in the establishment of Ruskin and its successors. A peculiar advantage of a hall that brought together a community of scholars (in the original sense of students) was the second reason — that advantages came from many parts of the country and even from all over the world, to share their knowledge and experiences.

These reasons seemed to be strengthened in relation to disadvantaged students at colleges like Ruskin not only by their greater need to benefit from sharing their learning problems but by the greater experience they brought than the teenage undergraduate to their studies. This then became the third reason for residential education, recognised most explicitly in the Russell Committee's Report, and it is indeed the experience which mature students bring to which a learning community that gives the colleges their strength.

These three reasons were accepted as valid by the DES in its establishment of a system of bursaries for mature students at the long-term residential colleges for adults and in the financial support given by the depart-

ment to these colleges over the last 30 years or so. Has something changed that now makes these arguments less compelling? Are there now more opportunities now for students to take a first chance at higher and further education, so that there is no need for second chance colleges? The fact is that the proportion of any group of 16-year-olds who go on to full-time education is still less than 20 per cent. Eighty per cent either take jobs or, in most cases, now find themselves unemployed. If they try to go direct to universities, they will need A levels or other qualifications for entry and will be charged on the state for their accommodation as well as their fees. And if they live at home they will not in turn be able to share the experience of others from other areas.

If they try to go on an Open University, or even an Open College course, they will come up against three obstacles — one, the payment of fees (£65 for an OU course); two, the requirement of basic study skills to make a start on a foundation course. These two may be overcome by employers or local authority grants and by preparatory courses. The third obstacle is more difficult to overcome — the time and place to study.

The overwhelming majority of OU students have already some education and have a job and a house that allows time and a room for studying. But the OU still has a very high drop-out rate. There are no doubt a number of reasons for this. One is that many students are not prepared for full-time study. Another is that many students are not prepared for the rigour of the OU's education. A third is that many students are not prepared for the isolation of the OU's education. A fourth is that many students are not prepared for the cost of the OU's education. A fifth is that many students are not prepared for the competition of the OU's education. A sixth is that many students are not prepared for the pressure of the OU's education. A seventh is that many students are not prepared for the uncertainty of the OU's education. A eighth is that many students are not prepared for the risk of the OU's education. A ninth is that many students are not prepared for the consequences of the OU's education. 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A hundredth is that many students are not prepared for the mightyness of the OU's education.

vide a final and clinching reason for residential adult education. They need not only the learning community of others with similar problems, the exchange of experiences, the time and the room for studying.

They need also the ethos of an institution that cares especially for their needs, that provides the opportunity for really full-time study, and this means for women a crèche, a nursery for single parents. It means courses that engage the special interests of students — as women, as unemployed, as disabled, as members of ethnic minorities.

The residential adult colleges were originally conceived of as a way of assisting gifted people who had missed out on educational opportunities at an earlier age to come back to education for a second chance as mature students. There was, and there remains, an element of elitism in the concept. The colleges continue to prepare students for study at universities and polytechnics, but increasingly they are wishing to open their doors to those who may never be able to enter the mainstream of society through work in trade unions, community associations and other voluntary bodies.

Each of these colleges has, in its time, added something new to the scheme. Northern College was founded by the four South Yorkshire education authorities with support from other neighbouring authorities, education bodies on trade unions, with the recognition of the Department of Education and Science. The aim from the start was to meet the needs of those who had missed out on education at the point of being prepared for full-time study but had found the need for

voluntary work.

Thus it was planned to build up a long course work by leaving as many student places occupied at any time by students on short courses, as their work on the long courses. This was designed to ensure not only that a large number of men and women could enjoy the college's resources, but so that the short courses might feed into the long courses in a process of continuing education.

The college increasingly recruits its long course students from the short courses on which a residential element is built into other educational provision, such as that at adult literacy and basic education courses, unemployment centres, trade union day release courses, church groups, co-operatives, youth and community groups, West Indian, Indian and Pakistani youth and community groups. The residential short courses element does is not merely to prepare students for one of the long residential courses, but to offer a period of concentrated study of a problem or problems which they are facing as a group, but away from the distraction of work and homes.

The argument for residential education at the Northern College has been that a residential element in a continuing education process is the best way to ensure that adult students experience is not only the basis of further education but provides the greatest strength of student-tutor interaction. It is then the student motivation and the ethos of such a residential college that has ensured a very low rate of drop-out from the courses.

Just to be under one roof with men and women, trade unionists and non-unionists, employed and unemployed, black and white, people from different cultures and different nationalities, is a learning process in itself.

The author is principal of Northern

BOOKS

Ideas in opposition

Talcott Parsons On Institutions and Social Evolution selected writings edited with an introduction by Leon H. Mayhew University of Chicago Press, £24.00 ISBN 0 226 64747 1

Talcott Parsons by Peter Hamilton Ellis Herwood and Tavistock, £7.25 & £3.25 ISBN 0 85312 429 9 and 439 6

C. Wright Mills by John Eldridge Ellis Herwood and Tavistock, £7.25 & £3.25 ISBN 0 85312 533 3 and 534 1

Talcott Parsons and C. Wright Mills were very different kinds of sociologist. This difference had little to do with their different Protestant and Catholic origins, not much to do with one growing up in the Middle West and the other in Texas, and hardly anything to do with their eventual institutional locations. Where they differed was in their conception of the sociological task, in the role which the character of sociology as a professional activity, and in the political responsibilities of the social scientist.

The marked differences between them – epitomized in Mills's savage denigration of Parsons's *The Social System* in *The Sociological Imagination* – are evident in these three rather different books. Two are introductions to a new paperback series on Key Sociologists which bears some resemblance to the Fontana Modern Masters genre. The third, Leon Mayhew on Parsons, appears in the much more substantial *Heritage of Sociology* series edited by Morris Janowitz.

Talcott Parsons on Institutions and Social Evolution will become a standard reference for those studying the development of his sociological ideas. It consists of 20 extracts from Parsons's work originally published between 1935 and 1977, grouped under the headings of sociological theory, institutionalization, institutionalized exchange, and social change and evolution. This is preceded by a substantial 60-page introduction by the editor which succeeds in taking a fresh perspective upon the development of Parsons's thought. Mayhew seeks to defend Parsons against those critics who treat *The Social System* as his major representative work. He succeeds in showing that Parsons's theoretical approach was much more subtle and that he was far from viewing society as comprised of over-socialized persons, caught in a rigid and unchanging normative system, one moreover without structural conflicts and justified by consensus on basic values.

The starting point for a proper understanding of Parsons, Mayhew argues, lies in his thoroughgoing rejection of positivism and his development of an action frame of reference in which actors have ends they are pursuing, within the constraints of realistic obstacles and the means open to them. The study of action involves a study of tension between normative and constraining elements. Both are necessary, and Parsons was certainly not an idealist. He did, however, emphasize the strategic centrality of the normative order for sociological analysis. This led to his central emphasis upon institutionalization and the proposition that "the structure of social systems is constituted in institutionalized normative culture."

The value of Mayhew's introduction lies in explicating the significance of this central concept of institutionalization. He shows how at first Parsons placed greatest emphasis upon socialization, then he shifted to the hierarchy of control, subsequently becoming interested in institutionalized exchange (notably in *Economy and Society*). The abstract level at which Parsons worked, on his ideas about the structure of social systems, is not a problem for the student, but Mayhew's lucid and convincing analysis of the continuity within Parsons's thought.

Peter Hamilton's short book has a different purpose and is written for a different audience. Mayhew's reader needs some familiarity with Parsons's work. Hamilton writes for the beginner, and provides a clear and interesting introduction to a particularly complex sociological thinker. After a substantial biographical chapter, he treats Parsons more conventionally in terms of three phases of his intellectual development, the voluntaristic, the emphasis on social systems theory, and the focus on hierarchies of control. Hamilton sets out these phases fairly within a brief compass, though the extensive use of acronyms is a minor irritation. There is a useful full bibliography of Parsons's work, though the point of listing his PhD students, many of whom will be unknown to British readers, is unclear. Hamilton is weakest in his brief attempts to assess Parsons's place in the development of sociology, a challenge which Mayhew meets more effectively.

If Hamilton's essay is useful, John Eldridge's on C. Wright Mills is distinctly important, because a clear short introduction to the work of the sternly petrel of American postwar sociology has been lacking for far too long. Eldridge provides a sympathetic but realistic overview of Wright Mills's life and work, moving from Texas to

Wisconsin to the East Coast, and from *Sociology and Pragmatism* through *Character and Social Structure* to *White Collar*, *The Power Elite* and finally *The Causes of World War Three*.

He brings out the essential elements of Mills's approach, including its historical specificity, its grounding in the classic sociological tradition, its strain of radical social criticism, and (prior to Mills's premature death in 1962 at the age of 45), its increasingly apocalyptic tone. Space is given to Mills's American critics, and Eldridge suggests that the famous strictures upon "grand theory" and "abstracted empiricism" in *The Sociological Imagination* were less than fully justified.

The two greatest contrasts between Parsons and Mills lay in their level of analysis and in their value standpoints. Ours was, as Mayhew brings out, Olsonian in his approach. His commitment to abstract and generalized theoretical formulations, which led to a specialized and sometimes impenetrable conceptual language, rendered a good deal of his theory not susceptible to empirical testing. Mills grounded his empirical studies much more firmly in the particular time and place in which they were carried out, linked to particular theoretical tenets. Eldridge discusses his clash with Parsons over the definition of power used in *The Power*

Elite. Politically, Mills was a committed radical. In social science, Theodor Veblen was his nearest equivalent. His work showed traces not only of political commitment but of a prophetic quality that sits uncomfortably with academic discourse. It is perhaps this which explains why "critical sociology", of which Mills was the foremost standard-bearer, has not infrequently seemed so insubstantial in failing to turn promise into achievement. Talcott Parsons, on the other hand, was strongly committed to the central value systems of American society. Mayhew discusses perceptively and fairly the charge that he was politically conservative, concluding that such a charge is an oversimplification and that a belief in confidence, trust and faith was the basis of his view of social order. Parsons's critique of the liberal intellectual's ambivalence about the contemporary world aroused the hackles of his detractors to such an extent that it has impeded a full and adequate appreciation of the subtlety and richness of his sociological thought.

Martin Bulmer

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Talcott Parsons

Social inquiry

The Scientific Analysis of Social Behaviour: a defence of empiricism in social science by Michael Nicholson Frances Pinter, £15.50 ISBN 0 302 7082 5

Dr Nicholson seeks to make a case for an explanation of social behaviour which "in style follows the general pattern of the explanation of natural phenomena". In his view it is possible to make valid generalizations about human actions and experience within the context of a theory which satisfies the logical and empirical conditions appropriate to scientific explanation. This explanatory form corresponds to the covering law model or deductive-nomological explanation argued by Hempel and others as characteristic of the natural sciences.

The first part of the book is concerned with the elucidation of this model before turning to the problem of its application to the field of the social sciences, concentrating on economics and international politics. Though rather compressed, this discussion of scientific explanation is intelligent and perceptive.

The difficulties arise when the model of science as presented by the author is applied to social behaviour. Although he recognizes that the facts that human beings have cognition, consciousness, volition and purpose, differentiate their activities from the actions of physical objects, in his view this does not preclude the formulation of valid generalizations within the framework of an explanatory theory about them. According to Nicholson, human behaviour can be explained in terms external to those used by those engaged in it. In explaining, for example, why some people enter monastic life he asserts that citing their beliefs is insufficient; what is necessary is to explain why they held them. And this in turn entails the formulation of a theory which provides a basis for generalization about such behaviour.

This is to treat human actions, such as becoming novice in a monastery, as akin to an event in the physical world. But in blurring the distinction between an action as part of human consciousness and as an event as a phenomenal "happening" Nicholson skates over the problem the scientific theory is essentially atemporal. The "real" world of events is timeless, though not devoid of duration, process and sequence. In principle scientific "events" are replicable, the human world of action is essentially temporal, located in unique circumstances which give a specific action its character. An event is explicable in terms of cause and effect, by subsuming within a theory. But an action is explicable in terms of intention and purpose, that is, within a framework of reasoning specific to it. The former entails generalization while the latter does not. The problem

for the author is that he wishes to generalize about human actions and this in my view is a mistake.

The notion of "event" as the subject-matter for a social science is further complicated by the author's conception of it as something not only observable in principle but as linguistic or verbal in character. And so the level of consciousness and expression is deemed after all to be relevant. In a sense human "events" are treated much as Cellingwood treated artifacts; they have a physical dimension and a dimension of "thought". But unlike Cellingwood the author is seeking to vindicate a theoretical approach which generalizes. Science, however, is not founded on a common-sense understanding of the physical world. There is indeed a sense in which the sun rises but it is not a scientific one. Its subject-matter is in a fundamental sense created through successful explanation.

In treating human action as a form of event both external and internal to the actor, Nicholson begs the question as to what is the subject of a theoretical inquiry. One condition for an explanation is that the thing explained is logically independent of the explanation. Yet we have to internalize the explanation by inquiring into and understanding the reasoning of those whose actions we seek to explain, and at the same time stand outside that reference in order to advance a generalization about them, then we would seem to have confused two uses of explanation. For the former is specific and contingent, while the latter is atemporal and general. In a sense the language and logic of science is used to "explain" the language of human actions and experience. To put it another way, we, as social creatures, directly apprehend through language and practices, to translate this level into an external conceptual framework is literally to do that, that is, to translate and explain. A genuine science of human behaviour would have a genuinely different subject-matter than which properly belongs to the actual level of human understanding of action. Science discovers things in the sense that it produces new knowledge, not a rehearsal of that which we already know.

Finally, Nicholson seems to confuse the logical form of a hypothetical-deductive theory with the empirical conditions it needs to satisfy to make it a satisfactory explanatory. A theory may not be a logical condition but yet have theories exist in the social sciences. Choice favoured by the author, while they may influence the logic of a covering law explanation they do not or cannot satisfy the empirical conditions of testing through experiment and observation. Perhaps the emphasis in the social sciences should be placed more on formulating the appropriate criteria for testing, rather than formulating theories.

In seeking to vindicate a theoretical approach, Nicholson has confronted the problems with honesty and with perception. His thought-provoking

book is a serious contribution to discussion of the appropriate form of explanation in the social sciences. But a better "defence of empiricism" could be made if a genuine level of theoretical explanation of social behaviour actually existed.

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Customs made

The Invention of Tradition edited by Eric Hobsbawm and Terence Ranger Cambridge University Press, £17.50 ISBN 0 521 24645 8

When we describe a belief or pattern of behaviour as "traditional" we usually mean to indicate simply that it is well-established, though sometimes we also want to convey that its origins are obscure, hidden in the distant past, a matter of custom or convention rather than a direct development from a specific point in time. "Invention", on the other hand, implies a very precise moment and action – "Emile Berliner invented the gramophone disc in 1887." We do not usually go on from that statement to say that Berliner's invention started a tradition of playing discs on gramophones. We could say it, but we probably wouldn't.

It is, therefore possible to talk of traditions as being invented? Eric Hobsbawm, together with the other five contributors to *The Invention of Tradition*, argues that it certainly is. He offers "invented tradition" as a "broad, but not imprecise" term, and describes the object of the book as being to "encourage the study of a relatively new subject." In fact the term is often used imprecisely by the contributors, or rather, in so many different senses that its meaning becomes imprecise – and several of the essays would fit quite happily into totally different historical contexts. Yet the basic idea is a fascinating one. *The Invention of Tradition* is quite literally packed with information, some of it familiar and everyday, some bizarre and arcane.

The most immediately accessible examples of invented tradition are those in which rituals or symbols are consciously created with a built-in spurious historical authority. Bernard S. Cohn, for example, examines the use of *darbars* or public assemblies in India to demonstrate the way that the British consolidated their position of authority while apparently deferring to Indian "traditions". In a related essay, Terence Ranger explores the importance of invented tradition in the "neo-traditions" codes of behaviour which though relatively new to many of the white settlers themselves, soon gathered symbolic force as social and moral absolutes.

Both of these cases involve traditions being brought from outside of

being reconstituted within the subject countries. In Scotland and Wales the process was more indirect though, of course, English values still had a part to play. In a brilliantly argued essay Lord Dacre sets out to prove conclusively that "the kilt is a purely modern costume, first designed, and first worn, by an English Quaker industrialist, and that it was bestowed by him on the Highlanders in order not to prevent their traditional way of life but to save the kilt from reality in the Welsh household revival of the late eighteenth century. Druids, harps, red dragons, and Wales" with his pointed hat and coat, even the Welsh mountains – all but very suspect pedigrees.

It sounds as though absolutely nothing is sacred under the new discipline of invented tradition, and that fact is fully borne out by David Cannadott's dismantling of the monarchy. British pride in the uniquely regal manner in which our monarchs and their relatives are married, crowned and buried, is shown to be barely a century old. Before Queen Victoria's Golden Jubilee of 1887 royal pageants were, apparently, pitiful affairs. At the funeral of Princess Charlotte in 1818 the undertakers were drunk; at George IV's coronation prizefighters had to be employed to sort out the guests. It is not difficult to see why these royal proceedings were given a new kind of dignity and organization in the late nineteenth century. Cannadott quotes Walter Bagehot who is, as usual, very much to the point: "The more democratic we get, the more we shall get into the habit of looking at the past as a mere show, which have ever pleased the vulgar."

Those sentiments have a wider relevance which is taken up by several of the essays, most notably Eric Hobsbawm in "Mass-Producing Traditions: Europe 1870-1914". The passion for inventing traditions tends to be at its height when societies are experiencing fundamental political changes. From the 1870s onwards the mass movement of Western Europe and America, the development of a mass democratic society, though this is complicated, as Hobsbawm shows by different kinds of nationalistic traditions – France after the Revolution, Italy after unification, America confronting the problem of immigrants from a wide variety of different cultures. Hobsbawm's comparative study is an impressive demonstration of just how much is, potentially, involved in the invention of tradition; everything, really, from national anthems to special postage stamps, from old-boy networks to "the proletarian cap" as worn by both Karl Hardie and Andy Capp. There are enough suggestive ideas here to keep a whole new generation of historians busy for years, and if that happens we could also be witnessing the invention of one more tradition to join the rest.

The relative wealth of surviving information about queens casts welcome light on some of the obvious concerns of women's history: the fear of sterility and the terror aroused by the illness of a child (though not the sexual brutality which is pointed up by some of the saints' lives) are the subject of some moving pages. More broadly, queens resembled their sisters in early medieval society in being essentially objects of use, sacred, transferred and discarded as the diplomatic and dynastic needs of their own and their husbands' families dictated. But their history brings out more fully, at least in Pauline Stafford's hands, the strength as well as the weakness which was conferred

Peter Keating

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BOOKS

Women of property and power

Queens, Concubines and Dowagers: the King's wife in the early Middle Ages by Pauline Stafford Batsford, £14.95 ISBN 0 7134 4399 5

Women in the Middle Ages: religion, marriage and letters by Angela M. Lucas Harvester Press, £18.95 ISBN 0 7108 0348 6

At the diet of Raro in 984 Duke Henry the Wrangler of Bavaria signalled the end of his revolt by returning the infant emperor Otto III to his mother Theophanu, who ruled the empire on his behalf (describing herself as *consors imperii*) and his grandmother, Adelaide, who controlled vast territories in Italy in her own right, through inheritance and dowry.

"It was as dowager queen mother and regent" Pauline Stafford remarks, "that a woman might hope for greatest influence", to such an extent that in those years women ruled the greater part of western Europe. They represented the apogee of this absorbing and strikingly original study, which ranges across dark ages Europe, examining the queens of Merovingian and Carolingian Gaul, Anglo-Saxon England and Lombard Italy as well as imperial Germany with a clarity and mastery of detail which are equally remarkable.

The great strength of Dr Stafford's presentation is that by discussing her queens in relation to the stages of their lives, as "the bride to be", "the king's wife" and so on rather than biographically or chronologically, she avoids trivialization, and concentrates firmly on their role and function. The approach is one that would reward imitation – "Counsellors, Favourites and Followers" would make almost as valuable a sequel – and enables the author to extract an astonishing amount of illumination from the fragmentary and heavily biased sources from which she must write.

Here is the central problem in dealing with groups like women, whose members are the victims of prejudice, complacency or neglect. As Angela Lucas demonstrates all too clearly anything less than the most rigorous definition of the problem under review and the most skillful analysis of every text in the light not only of its author's general presuppositions, but of his (it is always his) particular circumstances and motives produces more actors and paste. For want of the technical expertise and intellectual firmness which these problems demand her attempt to bring together what the vernacular literature of medieval England reflects about the position and problems of women becomes an ambivalence on such topics as "the trials of virginity" and "the feudal wife" is argument as limp as the conclusion that "many women were neither regarded as useless, nor were they oppressed . . . and they were often accorded considerable responsibility".

The relative wealth of surviving information about queens casts welcome light on some of the obvious concerns of women's history: the fear of sterility and the terror aroused by the illness of a child (though not the sexual brutality which is pointed up by some of the saints' lives) are the subject of some moving pages. More broadly, queens resembled their sisters in early medieval society in being essentially objects of use, sacred, transferred and discarded as the diplomatic and dynastic needs of their own and their husbands' families dictated. But their history brings out more fully, at least in Pauline Stafford's hands, the strength as well as the weakness which was conferred

by their role as providers of heirs. The combination of frequent minorities (because kings were often relatively aged at the birth of their first legitimate children, as well as chronically accident prone) with the absence of fixed rules of succession meant constant manoeuvre and intrigue in which the queen's control over the children and her access to the powers of the crown, and especially the royal treasure, gave her a central position; it also, of course, exposed her to the imputations of unchastity, vindictiveness and tergiversancy which so enliven the early chronicles.

Much of the case for women's history is that it is not just women's history: to ignore half a world is to misunderstand the whole. The most fascinating chapters of this book explore the role of the queen in managing the royal household, and particularly the treasure which is so persistently at the centre of political action right up to Henry's dash for Winchester after his brother was shot in the New Forest in 1099, and Stephen's offer Henry's own death in 1155. "The personal nature of rule

made the court . . . the centre and symbol of the entire kingdom", and the queen's part in it, like her responsibility for the emperor's new clothes, the most magnificent of which she made with her own hands, was as essential to the reality as to the symbols of power.

The queen, in fact, was much more than the king's wife. The title implied not only legitimate marriage (a complex idea upon which Dr Stafford has much that is important to say) and rights over property, but the exercise of defined and substantial powers at court. Asser's famous remark that the West Saxons had no queens until Charles the Bald insisted that his daughter Judith should be properly anointed and recognized on her marriage to King Aethelwulf marks a real change in political practice.

This study of queenship, in short, is also a major contribution to the history of kingship, to which it is new probably the best and certainly the most enjoyable introduction. It also provides a necessary, and fully worthy, companion to the recent work of Georges Duby on medieval

Marriage and Le chevalier, la femme et le prêtre. Duby has shown how the reorganization of noble families in eleventh-century Europe into patrilineal dynasties by the exclusion of daughters and younger sons from claims to inheritance, and the affirmation of the new restrictions on women through the exaltation of chastity and the cult of courtly love in the twelfth century were the essential foundations of the social and political order of Europe in the high Middle Ages. Now Pauline Stafford shows how the accumulation of property and power in the hands of women like Adelaide and Beatrice in the tenth century – and, she rightly suggests, not only queens – made that subjugation necessary, at least from one point of view. In doing so she reminds us again how much we need a serious study of the position of women – all women – in the Middle Ages. Now she will have to write it.

R. I. Moore

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Essex and the civil war

The Puritan Moment: the coming of revolution in an English county by William Hunt Harvard University Press, £24.00 ISBN 0 674 73903 5

At the time of the civil war Essex was regarded as a leading county both in terms of its staunch support for Parliament – it was the "first born of Parliament" – and the ardour of its protestantism. It was also a rich county with a relatively advanced level of economic development, in which the notoriously precarious cloth industry played an important role in a predominantly rural economy.

From the late sixteenth century onwards, Essex society was becoming increasingly polarized with at one extreme a landowning aristocracy deriving most of their manorial income from rents and, at the other, the rapidly growing ranks of the landless and wage-dependent poor. The expansion of the latter resulted in a corresponding rise in anxiety about crime, social stability and the burden of social welfare among the parish and county elites.

The local aristocracy and gentry were relatively new arrivals both to the county and to their social status. The Riches were the pre-eminent county family but, despite royal favour, they did not enjoy complete political power until well into the reign of Charles I. Such a potentially fertile combination of religious, socio-economic and political features should have guaranteed Essex high priority in terms of research interest yet, with the exception of a broader study of the Eastern Association by Clive Holmes, the county has not been a beneficiary of the recent proliferation of county studies of the civil war.

William Hunt has more than compensated for this neglect in his work of boldness and imagination which, although occasionally prompting more questions than providing answers, sheds fresh light upon the causes and eventual outbreak of the English civil war. Dr Hunt makes a qualified return to the notion of a "puritan revolution" as he seeks explanations for the county's radicalism. "Puritanism" is initially defined in terms of its familiar religious preferences and intensity of conviction, making the distinction from orthodox Anglicanism prior to the 1630s problematic. However, having related religious beliefs to socio-economic and political realities, Hunt has chosen to lay particular emphasis on the puritan domestic obsession with imposture, moral and social discipline upon the surrounding community, and their wider, distinctly grandiose conception of an imperialist destiny for England. The revisionists' disproportionate emphasis on localism is countered by Hunt's perceptive appreciation of the Imperialist ambitions of the second Earl of Warwick



This 16th-century German ivory carving shows monks preparing illuminated manuscripts. The picture is reproduced from Anne Savage's new modern English translation and collation of *The Anglo-Saxon Chronicle*, published by Phoebe Phillips/William Heinemann at £14.95.

and his associates, which harmonized so conveniently with a puritan crusade against Spain and the Anti-Christ, Imperialism, the puritan mission and an embryonic radical political leadership finally converged in that most visionary of colonizing ventures – the Providence Island Company.

Those who equated tyranny with popery found their worst fears confirmed in the combination of arbitrary taxation and ecclesiastical innovation during the Personal Rule, and, if further proof were needed, there was clear evidence of divine wrath in the form of failed harvests, trade depression and plague. In the crisis elections of 1640, Essex preachers energetically drummed up support for the opponents of court candidates. This was the county that shattered some of the most famous puritan divines, like Stephen Marshall, whose voices were soon to resound from pulpits urging scriptural grounds for an active complicity

in Parliament. Zealous parliamentarians were in a minority even in Essex when arms replaced words in 1642. Hunt agrees with Holmes that there was a significant body of neutralist, or even Royalist, opinion in the county. Essex was eventually secured for Parliament, first, by the prompt and decisive leadership of Warwick and his friends, secondly, by the fervent propaganda of puritan divines and, thirdly, by rioters, composed largely of weavers, rural artisans and the lower-middle social strata, who intimidated local Royalists, and coerced would-be neutrals. The book ends on a note of climax, with the descent into war. Personally I would have preferred a different balance to allow closer focus on party division and the initial response of conflict.

Keith Lindley

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A safe guide

The Transformation of Medieval England 1370-1529 by John A.F. Thomson Longman, £14.95 and £7.95 ISBN 0 582 48975 X and 489768

Textbook series are many in number, and it can be no mean task to find a fresh formula to justify a new one. One solution is to cut up the chronological cake in a new way, and for their "Foundations of Modern Britain" series Longman have chosen to start in 1370, with this first volume by Dr Thomson ending with Henry VIII's breach with Rome. The book is divided into short analytical chapters; it is pessimistically but perhaps rightly assumed that students can no longer take in more than eight pages on one topic.

This is not a work which deliberately sets out to challenge established orthodoxies; its tone is careful and moderate, its conclusions balanced and understated. The "transformation" of the title was not a dramatic one: the main development was that England was at the start of the period a major European power, with ample territory in France, but by 1529 had become largely insular. Serfdom vanished, and the yeoman came into his own in a countryside much changed by enclosure. Cloth replaced wool as the major English export. Government became increasingly secularized, even though it was dominated at the end of the period by one of the greatest of medieval clerics, Wolsey. The breach with Rome was not as sudden as often depicted, for the church in England had come under increasing royal control during the later middle ages.

The book's range is such that some aspects inevitably receive rather short shrift. Parliament deserves more than one short chapter. War was of great importance in the period, with lengthy campaigns in France succeeded by civil conflict, and costly military adventures in the early sixteenth century. Yet although there are eight pages on the economic effects of war, the question of the recruitment and organization of armies receives little attention, and a great battle as Agincourt is dismissed in a sentence. Although the patronage and development of learning is discussed, the visual arts are not a regrettable omission in a book on a period which witnessed the flowering of the perpendicular style in architecture.

There are, on the other hand, many strengths in Dr Thomson's treatment. He has a particularly sure touch in his discussion of the church, where he questions the view that this was a period of widespread anti-clericalism, pointing to the scale of chantry endowments and pilgrimages as indications of popular piety. Though some of the clergy were corrupt, the bishops and abbots emerge as honest and efficient administrators, though Dr Thomson bee to confess that there is little evidence of any striking spiritual qualities. Lollardy was not a major threat, being confined to pockets of local support drawn largely from artisans. Though it survived through the fifteenth century, it was not to provide the leaders of the English Reformation.

One criticism that can be directed at the book is not the fault of the author. The selection of 1370 as the starting point for a history of Britain makes little sense, as the frequent references back to the early fourteenth century show. It might have made more sense to start at least with Edward I, whose conquest of Wales opened up the Scottish border, and whose reign was a period of British history for centuries to come. 1370 is not a significant date in the history of Britain, and it is not surprising that this book is in fact a study of England. The full British perspective will perhaps emerge in the later volumes of the series.

This is a skillfully constructed book, in which students will find many an essay topic conveniently dealt with. They will not find here a re-telling of the dramatic excitements of the later middle ages, but rather a safe guide to a difficult period, with eminently sensible conclusions based on a broad learning.

Michael Prestwich

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BOOKS

Magnetic fields

Introduction to Geomagnetism
by W. D. Parkinson
Scottish Academic Press, £27.50
ISBN 0 7073 0292 7

Based on a series of lectures to third-year undergraduates at the University of Tasmania, this excellent textbook successfully bridges the gap in the geomagnetic literature between specialized texts, dealing with one aspect of the subject, and general geophysical books which usually condense geomagnetism into a single chapter or less.

After an introduction on magnetic principles, observational instruments, and so on, Parkinson progresses from an analysis of the Earth's main magnetic field and its origins, to the local field (essentially the magnetization associated with the Earth's crustal rocks) and then to the external fields (lithic, those fields associated with the upper atmosphere, solar wind, and so on). Induced magnetizations, mostly by the external fields, are then discussed before a concluding chapter on the history of geomagnetism, the relations between magnetization and biological organisms, and the organization of the International Association of Geomagnetism and Aeronomy (IAGA).

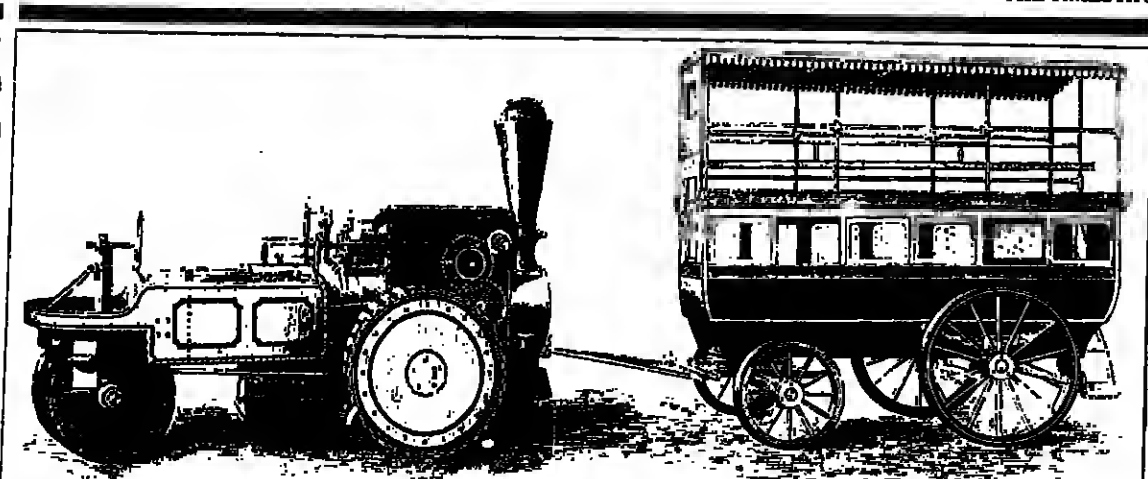
The book assumes a reasonable background to calculus, but most formulae are well described in physical terms in addition to their mathematical exposition. A series of appendices are included, mostly providing more detailed mathematical explanations and background to general items such as vector analysis, spherical harmonics, filtering, and so on. Parkinson avoids a pedantic style and the book is well referenced and indexed. The production is also generally good, although Parkinson's invariable desire to include pristine long-forms and aeromagnetic maps should have been tempered by the publishers, who must have known that reduction makes these appear even worse than in their original form.

Certain important omissions suggest that there may have been a significant delay between completion of the manuscript and its publication. Although new discoveries in geomagnetism are now somewhat rare, the sudden world-wide acceleration in changes in the properties of the Earth's main magnetic field (secular variation) has been well substantiated, yet this does not get a mention, despite its major importance. For comparison with changes in the Earth's rate of rotation and hence its implications for coramantle coupling. However, Parkinson might understandably have not considered the acceleration to have been sufficiently substantiated some two years ago.

Such an excuse is not available for other omissions. Possibly the most important feature of the geomagnetic field is its ability to reverse polarity, yet only five million years is illustrated. More importantly, even though older polarity changes are mentioned, there is no discussion of the meaning of changes in the rate of polarity change with time. Has the geomagnetic field always been shown the ability to reverse? Has the polarity change always been close to 180 degrees? How does the geomagnetic field behave during a polarity transition? Questions fundamental to any study of the nature of the geomagnetic dynamo, yet barely mentioned, let alone discussed.

Similarly, although some data, albeit poor, are given on the magnitude of secular variation in the geological past, this is not mentioned. This scant treatment of such important topics must be contrasted with the 26 pages devoted to the analysis of economically important magnetic anomalies, which have little direct bearing on geomagnetism. A similar lack of judgement is also indicated by almost four pages on the structure of the IAGA. Surely it would have been much more relevant to discuss the magnetic fields of other planets in preference to such esoteric factors.

These deficiencies are, however, largely compensated by the book's broad



Traction engine harnessed to an omnibus, an illustration taken from *The Engineer* (1871). From *A History of Industrial Design* by Edward Lurie-Smith, published by Phaidon at £20.00.

broad treatment, which gives equal weight to the aeromagnetic aspects that are often omitted from solid-Earth texts. The inclusion of Australian examples is also a welcome sight: this must be the first book on geomagnetism that does not illustrate the historical records from the London and Paris observations.

My main reservation in recommending this book as an undergraduate text is that many geophysicists courses are given within a geological context and to students who may not have the necessary mathematical background – a situation that is changing, as geologists become more numerate. I can, however, highly recommend the book for undergraduate and postgraduate geophysics courses that have a sound physics/mathematics basis.

D. H. Tarling

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Wild behaviour

Animal Behaviour: ecology and evolution
by C. J. Barnard
Croom Helm, £17.95 and £8.95
ISBN 0 7099 0636 6 and 0673 0

Until recently, there were very few introductory undergraduate textbooks on animal behaviour, but over the past two or three years several have been published. Of these, C. J. Barnard's book is one of the best. As its title implies, it is heavily slanted towards adaptive interpretations of animal behaviour in the wild.

In a series of excellent chapters, the author tackles many of the key issues in contemporary ethology – motivation, mate selection, foraging and optimality theory, contests, and coexistence – and organizes his discussion of each topic very skilfully. In each instance he explains the underlying conceptual issues clearly, and although he presents a great deal of hard data he does so without obscuring the arguments that he is developing. Indeed, one of the author's strengths is his ability to link a whole series of complex arguments together in a sufficiently clear fashion for readers to know exactly where they are going.

Not everything, however, is above reproach. One of the most difficult decisions that an author of an introductory textbook on animal behaviour has to make is how much to include on brain anatomy, neurophysiology, and sensory physiology. Each, of course, needs a book of its own, so there is a great danger in one's tries to do justice to them in a book on ethology, that the book will become too long and unbalanced. To go to the other extreme and leave out all mention of the brain and associated physiology would be equally perverse, even though I suspect many contemporary ethologists would scarcely notice their absence. Although Barnard sensibly limits the amount of brain anatomy and neurophysiology, the result is a very heavy book, primarily because he compresses his entire treatment of comparative brain anatomy and neurophysiology into a single chapter.

These deficiencies are, however, largely compensated by the book's broad

ral organization, hormone action, perceptual mechanisms and rhythmicity of behaviour into a single, dense chapter at the beginning of the book. The pendulum has certainly swung away from the situation in the 1960s when evolutionary and ecological aspects of animal behaviour were relegated to one or two chapters at the end of long volumes on the physiological mechanisms controlling behaviour. Somewhere, there must be a happy medium.

The illustrations are also less than perfect. It is not simply that they are less lavish or beautiful than those in, say, S. A. Barnett's *Modern Ethology* (Oxford University Press, 1982) or J. Gould's *Ethology* (Norton, 1982), but that quite often the labelling of the diagrams and the captions are difficult to understand – certainly in comparison with the lucid main text that accompanies them.

Given that no two ethologists are going to agree entirely about what should go into an introductory textbook nor about how the topics should be treated, there were remarkably few places outside the first chapter where I wished things had been approached differently. One such place, however, was in the author's treatment of genes and behaviour. Although chapter three is devoted to the genetics of behaviour, and chapter four to the role of experience and other environmental factors in development, we must wait until the end of this chapter for any discussion of the theoretical issues underlying the role of genes and environment in behavioural development – surely rather late for such an important topic. Also, nowhere does the author make explicit the rather separate issues at stake when discussing the genetic contribution to phenotypic variation within a population from those involved in a discussion of the genetic contribution to individual behavioural development.

However, these are relatively minor quibbles about what is, overall, a fine book. By contrast, 36 pages are devoted to the family of protocols used at the Edinburgh Regional Computer Organization (RCO) – protocols which do not have a wide following and which have somewhat limited features. Although the decision to devote so much space to these specific protocols would be understandable in a course given in the region covered by the RCO, it is less clear why this treatment would be of much interest to others elsewhere; and the author makes no attempt to relate the salient points of the RCO protocols to those more commonly encountered. However, the introduction to this chapter, describing how the RCO network looks from Strathclyde, does provide the reader with an early and valuable insight into how and why networks are used.

Most of the next 50 pages is taken up with a description of codes, use of the telephone network, interfaces, and network technologies, all of which are treated better than in many other books. The author's obvious desire to provide a practical content to his course has led to a useful chapter on the role of the PDP-11 computer in connection and to the specific one on protocols. Although I would not have chosen that specific subject-matter in my course, these chapters do hang well together.

There are, however, some serious omissions – terms not listed in the index include congestion or its control, flow control, sequencing, time out error (though there is a brief discussion of some errors, but not in any depth). Although the preface mentions that "two popular local area networks systems are described", the treatment is very superficial.

The author has tried to concentrate on a practical book. Indeed, he states that "all the communications software for the systems described have been personally implemented". Although the subject he is describing, it does lead to the unspoken and paradoxical coverage of the subject areas that I have indicated.

Peter Kirstein

Professor Kirstein is head of the department of computer science at University College London.

services more clearly defined. Substantial academic and industrial computer networks had been set up both in Britain and abroad, and there was increasing demand for relevant courses, for which there were few good general textbooks. Recently, however, a spate of books has appeared, varying from those describing only the National Public Telephone System and its data transmission services, to those going into very considerable detail on specific manufacturers' proprietary software.

This book claims to be a "practical guide to the implementation of computer software to communicate – with other computers and terminals". The general areas covered would seem to be useful (there are chapters on basic concepts, transmission of data, physical network techniques, implementation techniques, and protocols); and the chapter on physical network techniques has a section on packet switching, with subsections on the X25 standard, high-level protocols, transport service facilities, character terminal protocols, job submission and file transfer protocols – exactly the subjects I would wish to see in my course. However, I would have expected this to have been followed by a detailed critical discussion of the standardized protocols, but instead this topic is dismissed in a scanty seven pages.

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A second edition of *ADA: an Introduction* by Henry Ledger has been published by Springer at DM29.80. Based on the summer 1982 version of ADA, which was submitted to the American Standards Institute for their approval as the final version, the volume does not, however, contain the reference manual published in the first edition (issued in *The TIMES* of 4th Dec 1982).

Peter Kirstein

Professor Kirstein is head of the department of computer science at University College London.

Swimming techniques

Fish Locomotion
by R. W. Blake
Cambridge University Press, £29.95
ISBN 0 521 24303 3

The swimming of fishes presents a great many problems, only some of which have been solved. For example, we know why most fishes have a deep, dark muscle along their sides (it is used for prolonged swimming, and the rest of the fillet is used only for bursts of speed) but we do not understand why the fillet is divided into complicated W-shaped segments.

Measurements of oxygen consumption have told us how much power is needed for swimming at different speeds, and we can also calculate power requirements from observations of tail movements. Although estimates of power obtained in these two ways agree, we have only the beginnings of an explanation of why so much is needed – several times the power that would be required to propel a rigid, fish-shaped body at the same speed.

We have very limited understanding of why fish have different shapes: long and thin, short and fat or flattened from side to side. Although there have been many suggestions that details of the shapes of fast-swimming fish such as tunnies are adaptations for speed, most of them are speculative. We do not even know reliably how fast tunnies can swim.

A theory has been put forward that is designed to show how fish could save a great deal of energy by swimming in shoals instead of separately. Shallow fish, however, swim much faster apart than the theory says they should. All these problems (and many others) are discussed in this book – albeit briefly, but well – by an established authority on fish swimming and the leading authority on swimming by movements rather than by movements of the whole body.

Many non-specialist readers will be disappointed, however, that Dr Blake has designed his book for research workers in biomechanics and advanced undergraduates – that is, those who have "a working knowledge of mathematics and biology". He has therefore assumed that readers will already be familiar with many familiar concepts and can follow arguments involving straightforward calculus with the minimum of explanation. As he does not, however, expect much previous knowledge of hydrodynamics, an introductory chapter gives a remarkably comprehensive and succinct outline of the hydrodynamics used in the book.

Subsequent chapters discuss swimming muscle, swimming performance, the mechanics of various kinds of swimming, the control of swimming, optimum swimming strategies, and a few other related topics – each chapter being preceded by a brief statement of its contents. Although the book is mainly a review of work published elsewhere, it also outlines a new theory of swimming techniques in which the fins of certain fish are supposed to be wings, a theory which could be equally applicable to penguins and marine turtles.

As the book is only 200 pages long, it cannot explain in full everything we know about fish swimming, but the readers for whom it is designed will nevertheless find it a very useful summary.

R. McNeill Alexander

R. McNeill Alexander is professor of zoology at the University of Leeds.

A third edition of Norman V. Rottwell's introductory textbook *Understanding Genetics* has been published by Oxford University Press at £17.50.

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Commonwealth universities today

A SPECIAL REPORT

Next Wednesday however many buses it takes will transport the 600 delegates to the thirteenth Commonwealth Universities Congress and maybe another 200 spouses and guests will drive from the University of Birmingham to Lichfield on the Severn in Shropshire.

There the assembled vice chancellors, registrars and chairmen of councils, who will be the middle of discussing the difficult but highly relevant theme of the congress: the role of the university in technological innovation, will be able

to observe the relics of the technological innovation of two centuries ago, which was accomplished without much help from universities.

Some may mumble under their breath, "Plus ça change, plus plus la même chose." But perhaps the majority will reflect on how central the scientific knowledge generated in universities has become to the process of industrial innovation and how the responsibility has made them prisoners of expectations that would have been unthinkable back in the early days of the industrial revolution.

The theme of the congress has been subdivided into five topics – the social consequences of technological innovation, presided over by Sir Bruce Williams, director of the Technical Change Centre and former vice chancellor of the University of Sydney; the contribution of universities to integrated rural development, presided over by Professor R. W. Steel, former principal of University College, Swansea; university/industry partnerships, presided over by Sir Henry Clulver, vice-chancellor of Cranfield Institute of Technology; the development and transfer of technology,

presided over by Sir Denis Wilkinson, vice-chancellor of the University of Sussex; and continuing education, presided over by Dr John Horlock, vice-chancellor of the Open University.

To mark the thirteenth congress *THE THES* is publishing this special report which has the dual purpose of exploring the themes of the congress and of reporting on the condition of universities in nearly every Commonwealth country. It begins with Sir Henry Clulver on the most basic question of all, higher education in the real world.

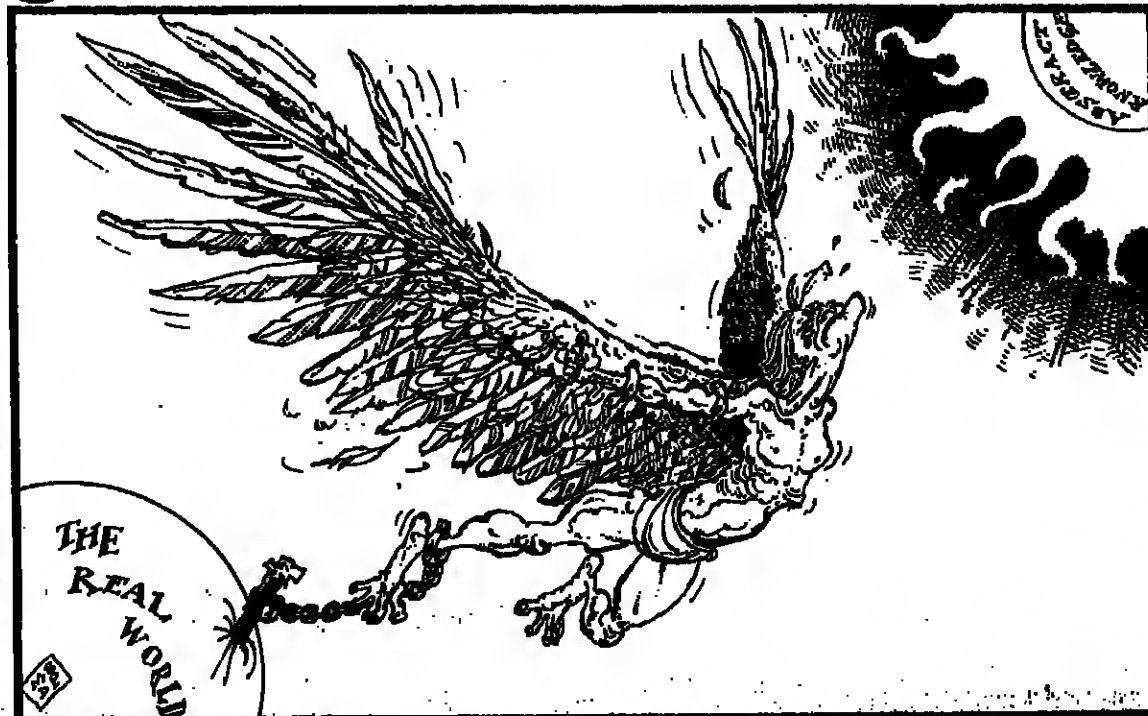
Preparing for a role in the real world

The role of higher education in society has undergone very considerable evolution over the centuries. In western societies, it probably reached its most rapid evolution – and expansion – towards the end of the last century and in the first half of this century. During that period, the developing styles of higher education in Europe were adapted to the North American scene, where they played a key role in economic and social development of that continent. During that period, the patterns of western higher education were also followed – but with less economic and social impact – in less developed parts of the world.

Much of the expansion of world higher education, to its present scale and diversity, is due to the strong pressures for high levels of education in areas of practical and professional relevance. Medicine, applied sciences, technology, engineering, and professions – such as the law and architecture – are all examples of this. As a result, higher education on the world scene is oriented strongly to vocationalism and to studies – including research – of practical relevance. In some western European countries, the movement towards higher education having greater practical relevance was marked by the development, particularly during the nineteenth century, of special institutions. The technical universities of Germany and the special high-level institutions of France are examples of this, and these in turn have been copied in other countries.

It is surprising, therefore, that there is really any need to justify the importance of links between higher education and the real world. Indeed, it is largely in countries in which these essential links have been eroded that we find the need to argue for such links. In Britain, the expansion of higher education since the 1950s has tended to reinforce the intrinsic role of higher education rather than strengthen or advance the case for links with the world outside. This is now posing a whole set of fundamental questions about present policies of higher education, and particularly about how young people can really benefit from these policies.

Among the topics for discussion at the Commonwealth Universities Congress in Birmingham this month, the discussions on university/industry links have aroused considerable interest. In some countries of the Commonwealth, notably Canada, these links are strong. In others – and not least in Britain – these links are relatively weak. The discussion at the congress has been structured to enable delegates to present their own case studies of successful links, and this has drawn wide interest among the delegates from all countries. All this shows very clearly the importance university leaders attach to the links with the real world. These are the highest levels of the educational system – centres of generation of ideas. This generation of ideas must be conducted against the background of genuine understanding of the real world – as



exemplified in the sciences, medicine, technology, economics, history, literature, and so on. This genuine understanding will be lost if institutions of higher education lose those links with the real world which provide stimulus for study and research.

Most students in higher education will pursue their later careers in the professions, commerce and industry – both private and public. It is true that some will remain in the educational profession – some even in higher education – but the majority will develop their lives and careers beyond the world of higher education. Higher education can only largely prepare young people for their real world roles, and this preparation must be concerned with essential basic knowledge and ideas. But these are not likely to be wholly effective unless teachers understand the real world scenes against which they are teaching. This is most obvious in areas such as medicine, but it is equally true, for example, in all fields of engineering and technology, in which students genuinely expect teachers to help them develop their basic knowledge against the background of the real world of engineering and technology.

In other words, basic studies in higher education do not stand in complete isolation. Indeed, the initial higher education of, for example, doctors, engineers and architects, is incomplete if the creative interests of students are not stimulated by basic courses. The importance of links between such areas of higher education and the real world is therefore self-evident. What is not so evident is that because many students, taking more general studies in higher education, also later pursue careers in the real world, there is also a need to link such broader basic studies more closely with real world activities. The future of chemical technology, for example, is critically dependent on the ways in which basic higher education of chemists, biochemists and scientists

relates to the potential for exploitation of these ideas in industrial technology. Research apart, there is therefore a very strong case for real-world linkages to enhance teaching in higher education and to give such teaching greater credibility to students who inevitably will be searching for greater relevance of their studies.

Institutions of higher education, as well as being concerned with teaching, are also centres in modern society for the generation of new ideas. Ideas and concepts in the sciences are self-evident. At the same time, centres of higher education generate ideas of wider relevance – economic and social issues, the study of history, and the whole gamut of the arts. Research itself has little value if researchers have limited contacts with real world problems. Moreover, the advancement of practical fields is possible only by tackling the basic problems of those fields. In this sense, knowledge and understanding by researchers of practical fields is essential. If these researchers are to identify basic problems which need to be solved. In this way, we can see that basic research can be strengthened through links with the real world. The practical world itself welcomes such links, because the development of practice is very dependent on the successful use and exploitation of new ideas and concepts.

We see, then, that links between higher education and the real world are important for both teaching and research. Such links occur already of course in diverse ways, over wide areas of teaching and research. But more particularly, what forms are taken by links between higher education and industry? We must see, in this context, as those areas of modern

society which are exploiting the most modern concepts of science and technology. These can be exploited not only for production purposes but for a whole range of situations in which science and technology contribute to change and evolution; in medicine, for example, through the use of modern ideas in the bio-sciences and many other areas of science; in the management and control of environment; in distribution industries; and in telecommunications.

The linkages needed are not just those with private industrial organizations – important though these are. In teaching, linking with industry can help higher education establish more diversity of course offerings. It can also lead to cooperative programmes, in which students divide their study and experience between higher education and industry in a structured way. In this, the student may be supported financially by industry – in the style of sandwich courses. At a more sophisticated level, linkages with industry can help higher education develop short, advanced courses for single organizations, for groups of organizations, or more widely.

In the whole area of linkages in teaching, Britain is relatively weak. Universities concentrate their teaching activities on three-year full-time degree courses. Although there are numbers of successful industry-related teaching courses, as a whole these constitute only a small part of university programmes. The polytechnics in Britain were intended to develop strong links, particularly with local industries; here again, although there are numbers of successful industrial programmes, polytechnic teaching has strong elements of traditional-style degree courses. The result is that we need to make considerably more progress in bringing higher education closer to industry. Ways of improving research links in Britain are discussed extensively in a recent ACARD (Advisory Council on Academic Research and Development) report.

Of course, the graduate of higher education. This is used extensively in North America, and generates feedback and resources for the parent university. It is particularly weak in Britain, where there appears to be no organized feedback and where graduates generally play very limited roles in the generation of new resources.

The styles of research links with industry are diverse. In most advanced countries, research tends to be concentrated in those centres of industrial technology which have the resources to support research programmes. As a result, the larger industrial organizations tend to form close links with relevant research centres in higher education. Such links may frequently be international in character, because the largest industrial organizations are

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of course keen to exploit the most relevant ideas, wherever these are generated. But much innovation in industrial and technological society is generated initially through small organizations. Higher education – in pursuit of innovation – must therefore seek ways of linking with small organizations.

This can be achieved in a number of ways, through higher education itself becoming more pro-active in generating these links. At the same time, higher education should encourage staff and students to set up small organizations to exploit new ideas. In this way, the movement of people from higher education into newly-created small organizations can make probably one of the most important contributions to modern societies.

Beyond teaching and research, there are many other forms of industry links. Consultancy by staff is often quoted as an important linkage, but the scale of this generally in higher education is relatively small. Play is made by some institutions of higher education of the value of testing and research services to industry; such services are sometimes offered to industries at marginal cost, since the capital costs are borne by higher education; not being pro-active, these types of services will generally run at low levels, since higher education is not likely to be funded at levels which allow for the growth of such services.

Higher education is used increasingly, in a number of countries, to provide advisory centres, usually subsidized by government, to accelerate innovation in industry. Some of these have proved very successful, and such centres will probably continue to be used.

Science and technology parks – for some decades a feature of North America – have attracted much interest in Britain. These are most successful in situations where the environment is one which will attract new small organizations. In areas of the "most modern ideas". The ingredients of attraction include not only the physical surroundings but ready availability of highly-skilled and innovative people, who by the nature of the advanced work maintain close links with higher education.

In general, the advantages of close links between higher education and industry, commerce and the professions are that, in developing such links, higher education itself has a wider understanding of the workings more generally of modern society. The pursuit of such linkages could lead to quite profound changes in higher education. Any institution of higher education must of course form its own independent view of its role in our highly complex society. There are increasing signs, though, that higher education institutions are thinking more carefully about their roles in relation to the world outside. As a result, such centres of higher education will almost certainly move closer to industry, commerce and the professions.

A number of advantages will flow from this. Teaching programmes will

become more relevant and diverse. Their greater relevance and diversity will attract discerning students. Research and development work will become more multiply-funded, reducing the researchers' dependence on a single, public funder.

Purists – both inside and outside higher education – will argue that higher education should aim only to do a job of basic education of young people; they will argue that, if that basic education is sufficiently broad, young people will have a framework within which to pursue their careers in developing fields. It is worth examining this argument carefully, because few would dispute the importance of broad higher education, at a basic level.

The weakness in the argument lies not, in fact, in pressing for broad basic higher education, but in how this can be achieved. The experience of higher education, in many countries, is that determining the breadth of basic studies in an isolated way, remote from centres of industry, commerce and the professions, leads to an unresponsive education system. Mechanisms are needed to generate more rapid and more effective responses to the changing scene of the world outside higher education.

But are such links in danger of undermining the academic independence of universities? Indeed, I would argue quite the reverse. If, for example, we look at the higher education scene in North America, we see very clearly the enormous contributions made by private universities to the most advanced academic ideas in many fields. Indeed, in Britain those universities which have made some of the most important contributions to the basic sciences and the arts are those which are in fact most strongly supported by industry and commerce. Clearly, it is important that institutions of higher education should not vie with commercial organizations. Linkages with the outside world are to be seen not as attempts to behave commercially but as an essential part of higher education which will enable it to perform a more effective role.

The congress in Birmingham will enable universities from the Commonwealth to compare notes on links with industry. The nature of these links throughout the Commonwealth varies very considerably. Different countries have very different social, economic and educational problems. It is very encouraging, though, that this wide discussion of university-industry partnerships has proved of such interest, and there is a real opportunity to develop a wider understanding in the community of Commonwealth universities of this vital aspect of university policies.

Improving research links between higher education and industry. ACARD Report, HMSO June 1983.

The author is chairman of the topic discussions on "University-Industry Relations" at the Commonwealth Universities Congress in Birmingham.

Henry Chilver

Technology's social consequences

Bruce Williams
comments on the
impact of
innovation

Technology consists of the practical arts of producing goods and services. Technological innovation is a change in one or more of the practical arts which increase our capacity to produce.

Innovations vary in their economic and social impact. The steam engine had a major impact. It freed manufacturing from the limitations of water power, and in its extension to land and sea transport transformed the size of the market and so promoted greater division of labour and wealth.

Marx, impressed by the significance of new forms of power, wrote that "the hand mill gives you the society with the feudal lord; the steam mill, society with the industrial capitalist", and he wondered whether electricity would be the new form of motive power that would give us a socialist society. Many years later Lenin gave electric power an important role in social change when he adopted the slogan "soviets plus electrification equals socialism".

Electricity certainly had major economic and social consequences.

Computers and microprocessors may well also have major economic and social consequences. But there are many technological changes of great importance which are not the result of a major innovation but of a series of many innovations and incremental improvements.

For the first industrial revolution in Britain, which we tend to associate with innovations in smelting, textile machinery and Watt's steam engine in the last third of the eighteenth century, an earlier agrarian revolution was an essential prelude. New crops and improved methods of cultivation and animal husbandry brought substantial increases in the quantity and quality of food and made possible an increase in population of 40 per cent between 1750 and 1800 – a very high rate of increase at that time, and to Malthus a dangerously high increase. But such was the increase in productivity that the proportion of labour needed to produce food came down, and the growth of industry was not hampered by a shortage of labour.

Industry then contributed to further innovations in agriculture. Over the years the engineering industry has supplied farming with new or improved machinery which has economized sowing and harvesting, done in good conditions, and made possible an increase in the area of land under cultivation. The chemical industry has provided synthetic fertilizers, insecticides, fungicides and herbicides. The scientific instruments industry has extended the capacity of agricultural scientists to observe, analyse and experiment, and greatly increased the productivity of their research into higher yielding soils, plants and animals.

Between the beginning of the Christian era and 1750, world population did not increase by more than 5 per cent per 100 years. But as a consequence of cumulative improvements in the technologies of food production, advanced medical technologies and preventive immunization, life expectancies have increased and world population is now about six times greater than when in 1789 Malthus published his first essay on population.

Just how much more population could become before reaching the Malthusian checks of war, famine and disease is a matter on which experts differ. Some argue that we are near the limit, and that deforestation, soil erosion, over-fishing are already shrinking the resource base of the world economy. Others argue that further advances in the sciences and technologies of agriculture should make it possible to support at least twice the present population.

But what is to stop a more than two-fold increase in population? To the industrialized countries the reduction in death rates was followed by reductions in birth rates. In western Europe, Canada and the US, Australia, New Zealand and Japan, crude birth rates now average under 15 per 1,000 women. In the less developed countries, however, the rates are much higher: 28 in China, 37 in India, 45 in Pakistan and almost 50 in Bangladesh and Nigeria. Economic development programmes and family planning measures have been labour-saving.

Over the last 100 years in Britain, each 4 per cent increase in hourly wage rates for males has been followed by a 1 per cent reduction in hours per year. Increases in incomes have also been followed by reductions in the age of retirement, and by increases in pre-employment education and the age of entry to the labour force. Since 1871, male hours of work per year have fallen by 36 per cent and years in the labour force by 17 per cent.

Hours worked per year by females have also fallen. Years in the labour force also fell between 1871 and 1921, but after that, and in particular after the Second World War, the labour force participation rates of married women increased and average years in the labour force are now 50 per cent higher than in 1871. That is a consequence of technological innovations which have reduced domestic labour and the size of families, and greatly increased formal education for females.

The combined effect of changes in hours per year and years in the labour force since 1871 has been a reduction in life hours of work since 1871 of 45 per cent for males 25 per cent for females and 40 per cent for all workers. The average annual change has been small. But if in the future labour-saving process innovations grew significantly relative to product innovations, the dangers of serious unemployment of new entrants to the labour market, and of older workers displaced by technical change, would increase. Preventing a secular rise in technological unemployment would require a rise in the trend reduction of years in the labour force and in yearly hours of work.

Major changes in patterns of expenditure have also followed increases in wealth generated by innovations. Households have maintained their children in education for longer periods and increased expenditures on durable consumer goods, health services and retirement schemes. In response to the aspirations of more affluent households and the rise in the taxable capacity, governments have increased expenditures on education and research, hospitals, and the social services including pensions.

The marked increase in government expenditures relative to the gross national product has been a major factor in the growth of the service sector. The decline in the rate of growth in output and the increase in unemployment in the last 10 years have created major budgetary problems in the western democracies and had a bigger impact on employment in the service sector than has the "mighty micro".

Another important social consequence of technological innovation and the growth of population and production is the increase in environmental pollution. The problems of pollution arise in part from the failure to spread the way pollution of the air, land and water cumulates, and in part from attitudes that known effects are a reasonable price to pay for growth. The desire to check environmental pollution rises with increases in wealth.

Innovations in weapons of war have been so remarkable that the basis of civilization could now be destroyed in a few hours. Their very existence will continue to induce a brooding sense of danger and insecurity. We could live much better with modern technology if all nations disarmed.

Technological change has brought many great benefits as well as some dangers. The benefits would be much greater if, by inventing the science of invention, we became able to control the balance between processes and product innovations. If we learned how to integrate technology policy and employment policy, if we made a policy of life hours of work part of employment policy, if we could make our pre-employment and post-employment education more effective and relevant, both to the changing needs of the labour market and the growing proportion of life time not spent at work; and more difficult than inventing new technologies, if we could learn how to treat our "near" and "far" neighbors with kindness and concern.

The author is director of the Technical Change Centre and former vice-chancellor of the University of Sydney.

COMMONWEALTH UNIVERSITIES TODAY

Harnessing development to specific objectives

K. L. R. Pavitt on the transfer of technology

The development and international transfer of technology (i.e. of knowledge of the industrial arts) have long been recognized by economists and others as central characteristics of economic, social and political change. Over the past 20 years, economists have also come to recognize them as important determinants of international patterns of production and trade. As a consequence, firms, governments and international organizations have started explicit policies to try to harness technological development more effectively to economic and social objectives.

Perceptions about policies for technology have shifted since the late 1960s: national patterns of development and transfer of technology have changed markedly since then; experience has accumulated in the implementation of policies; and there is now a substantial body of scholarly research on the development and transfer of technology in both the industrialized and the developing countries.

All these features were apparent at a recent conference on international technology transfer in New York. My view is that the shifts have been particularly marked in three respects: first, there is a clearer understanding of the nature of technology and of the factors associated with its successful development and use; second, there is a greater recognition of the variety and complexity of channels of international technology transfer; third, there is a better knowledge of the nature and international distribution of capacities for technological development.

We now have a clearer understanding of what technology is, and how it is developed and transferred. Most important is its highly differentiated and specific nature: knowledge about steel production, and is very different from knowledge about developing, testing and making pharmaceutical products. At the same time, improvements in specific technologies draw on wide ranging knowledge sources – from published science to unwritten skills in operating production processes whose fundamentals are only partially understood.

Thus, technology cannot be equated with science. The former is eclectic and concerned with making specific artefacts work, while the latter is focused on and concerned with making generalizable theories. The two overlap when focused theories help predict or understand the working of artefacts (e.g. chemistry and the properties of materials), and when they actually enable the development of a new range of artefacts (e.g. chemical and biological synthesis, electromagnetism, solid state physics).

Some scientific disciplines have typically been closer to technology than others, while some technologies have been typically closer to science than others. But in all technological and industrial sectors, the most expensive activities in developing technology are not scientific research, but the technological development and testing, and the production engineering activities necessary to transform an experimental concept into a fully operational product and production process, and to continue to improve and adapt it thereafter.

Given the differentiated and specific nature of technological applications, efficient development and production engineering activities depend on a thorough understanding of the eventual users' needs. Close and continuous contact between those developing and those using a technology is therefore necessary, whether it be a new or better machine tool, or a new or better strain of crop. In industry, this generally means that technological development is best performed within the same firm that does the producing and selling. In agriculture, it means the experimental stations, demonstrations and advisory services for farmers are essential features of efficient technological development. In general, it has meant that policies to establish applied research and development laboratories in isolation from users have not on the whole been successful.

It is misleading to think of a "world pool of technology" into which firms and countries can freely and easily dip

in order to extract the knowledge and skills that they need. There may be a "world pool of science" which is, in the narrow sense, freely available. But parts of this scientific pool become technology only through combination with other knowledge sources, and after heavy expenditures on development and production engineering.

In addition, given the differentiated and specific nature of technology, firms and countries cannot obtain and exploit technology without costs to themselves. Even if the technology is acquired from outside sources, its effective assimilation inevitably entails the acquisition of new skills in the assimilating institution, and some modifications of the products and processes to specific conditions.

The differentiated and specific nature of technology also constrains and defines the range of technologies that a country or a firm can exploit, either through intra-mural development, or through assimilation from outside. They are more likely to master technologies that are in zones close to the ones that they have already mastered.

While, at one extreme, it is mistaken to think of a freely available "world pool of technology", it is also mistaken to think that most technology is controlled by a few large, multinational firms who can effectively decide, through their international production operations, which countries will have access to technology, and which will not.

Japan has probably been the most successful country in assimilating foreign technology, but it has traditionally had very restrictive policies towards local production by foreign multinationals. In the UK, where policies are

more liberal, local production by foreign multinationals has accounted for only between 15 and 20 per cent of the new technology introduced into the UK since the war.

Given that, over this period, the UK produced between 10 and 20 per cent of the world's new technology, between 60 and 70 per cent must have come in the UK through other channels, such as licensing agreements between independent firms, imports of production equipment embodying new technology, and the international migration of industrial scientists, engineers and technicians.

There is some evidence to suggest that a very important means of international technology transfer is "reverse engineering", where imitating firms take to pieces and try to understand the workings of product innovations developed in other countries, before designing and developing their own products. According to a study of more than 200 significant innovations commercialized in Canada, about half the imitations of foreign technology were through this channel. It is likely that the skills and equipment necessary for efficient "reverse engineering" are very similar to those necessary for the production of original technology.

In the 1960s, the emphasis on the importance of multinational firms in developing technology, and on their supposed effectiveness in controlling and diffusing it beyond national boundaries, led many observers to predict that countries with large and established multinational firms would build up cumulative technological and productivity leads over their international rivals. In particular, the USA would widen the technological gap

between it, on the one hand, and Western Europe and Japan, on the other. More generally, the industrially advanced capitalist countries would widen the gap between them and the developing countries.

The reality has turned out to be rather different and more complicated. Contrary to the prediction, Japan and Western Europe have, on the whole, closed the technological gap with the USA, but some countries have been more successful than others: West Germany and Japan, for example, have not just caught up, but have overtaken the USA in some sectors, while the UK has, on the whole, continued to lag behind. Both the overall process of catching up and the differentiated performance of the catching up countries can best be explained in terms of their indigenous technological capacities. For example, Germany's capacity had already been at the world frontier before the war which enabled the rapid assimilation of foreign technology after the war; while Japan had had a conscious and energetic policy since the late nineteenth century of catching up to the world technological frontier, and began to reach it in the 1960s.

Perhaps more unexpected, but of greater long-term significance, has been the assimilation of foreign technologies associated with the so-called newly industrializing countries (NICs), principally in South East Asia and Latin America. This is reflected in their increasing production and exports. A number of recent studies show that the NICs have developed the skills to assimilate and use foreign technology, and both to adapt it to local

conditions and to make incremental improvements. These are not reflected in high levels of industrial expenditure on R and D activities that would enable major technological improvements, but in increasing skills and resources in the design offices, production engineering departments and quality control services of industrial firms in these countries; the existing range of statistics on science and technology measure these technological activities only very imperfectly.

The countries of the Commonwealth are at all stages of technological development: from the mature industrial (UK), through the high income countries with strong technological capacities accumulated around their natural resources (Australia, Canada, New Zealand), in the NICs of Asia, and the largely subsistence economies of Africa.

It is difficult to identify what they have technologically more in common than any other group of countries. Perhaps their pattern of technological skills still reflect to various degrees the long-standing British strengths and weaknesses: relative strength in technologies based on science, such as electronics, chemicals and agriculture; relative weaknesses in technologies based on design and production engineering.

Such patterns are likely to become less evident in future. Commonwealth countries are bound to rely to an increasing extent on sources of advanced technology other than the UK, witness already the influence of US technology in Canada, and of Japanese technology in Hong Kong and Singapore. They will also develop their own technological traditions and capacities.

The author is senior fellow and programme leader at the Science Policy Research Unit, University of Sussex.

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COMMONWEALTH UNIVERSITIES TODAY

A decade or two ago it was generally assumed, at least in Britain, that the traditional pattern of formal education, from primary through secondary to higher education, was capable of anticipating and responding to the changing needs of society. It was felt that the rapid expansion of educational provision in the universities would equip graduates with the necessary expertise to harness the technological revolution. It is now abundantly clear that this optimism was misplaced. Far from leading the new industrial revolution, we are lagging behind it.

In a rapidly changing economy, the necessary changes to occupational structure cannot await the slow realignment of provision in the schools and the universities. Much of the knowledge acquired during formal education will not retain its relevance 20 years later. It is by making an immediate impact on mature adults through continuing education courses that we have a chance of keeping abreast of new developments. And continuing education also has an important role in helping people adapt to changing roles in society, in widening their interests beyond the workplace.

However, in Britain, the provision of part-time continuing education courses is now becoming well-established in our universities. About 500,000 people are registered as part-time continuing education students with extra-mural or other university departments. In addition, 100,000 students are now taking part-time courses at the Open University, though they are not all in our sense continuing education students. A large majority (some 65,000) are "regular" undergraduate students and a small minority (about 500) are part-time postgraduate students. We say the remaining 35,000 students are to continuing education — those who take no degree courses or by instructional packs. These range from short sub-degree level courses and learning materials through individual courses drawn from the undergraduate programme, to "taught" postgraduate courses for professional updating.

More recently, existing provision has been given a major fillip by the Government's proposals for further growth in vocational continuing education. The Committee of Vice-Chancellors and Principals has warmly welcomed these proposals, and British universities see themselves contributing increasingly to professional, technological and commercial education through part-time education for adults.

Yet the universities' conversion to such subjects and such students is sometimes doubted. Cynics say that dons do not like to be diverted from the green pastures of their own discipline-based research interests and related teaching, and can always find elegant arguments to rationalize what is actually inherent disaffection. As with most such statements, the cynicism reveals a grain of truth.

However, the green pastures have for some time become arid deserts, and don't like other mortals have to seek more fertile oases. What government says the country needs (and it is right) is a major expansion of vocational

Keeping up with the new industrial revolution

John Horlock on the value of continuing education

based continuing education. So faculties which have kept at a distance from adult education are now discovering a life-giving draught, not only of finance but of stimulating new work, flowing from the springs of continuing education.

But continuing education is not without its problems. The spring water suddenly tastes bitter when it is learnt that the proposed courses must be known in advance to be saleable. Academic staff have to familiarize themselves with new collaborators, new course structures, new arrangements for distribution: challenges which will be stimulation to some, irritation to others. For vocationally-based continuing education courses the collaborators will naturally tend to come from industry and commerce.

Among others, Lord Flowers of Inverness College has noted the "interface problem" which exists between universities and industry, adding that mutual need may now be creating conditions to solve it. The lead of the Science and Engineering Research Council in contributing to change of attitudes, and creation of an innovative climate is notable. Among other schemes, they are financing a major postgraduate training programme at the OU in which our own staff, along with specialists from other universities and industry itself, are producing modular-based courses on manufacturing systems and on the industrial application of computers.

The new technologies are of course a catalyst for growth in the area of continuing education. On the new Engineering Council we are settling about the lack of identifying potential new industries, and ways of revitalizing old industries. The pattern of this new technology will directly affect selection of the vocational courses required in continuing education. Technical advances will be frequent and over shorter and shorter timescales.

Two major groups likely to benefit from in-career training in modern industry have been identified by Sir Geoffrey Allen, formerly chairman of the Science and Engineering Research Council and now director of the research and engineering division at Unilever. In a paper to be given to the Thirtieth Commonwealth Universities Congress, he points out how rapidly technologists in industry are finding their original skills made obsolete (unless they happen to work in research and development). A different but equally vital need is teaching general managers in manufacturing industry about the technical base of their industry; decisions on finance, marketing and manufacture are becoming closely integrated.

I endorse Sir Geoffrey's analysis. In my own profession of engineering it has long been clear to me (and indeed to my fellow members of the Institution

committee) that we have lagged behind our competitors in the field of professional updating. Turn to the USA, Japan or West Germany, and you see a clear-cut and established recognition of the need by professionals to update. It is not only in our universities that the pressing needs for new training packages have been ignored — more importantly the blinkers have been on in UK industry itself. Let us hope now for a fruitful partnership between industry and the universities in the industrialized nations which will remedy the previous neglect by both sides.

Nonetheless in this brave new world there are problems beyond those of traditional attitudes on either side, not least those of finance. The British government believes the development of continuing education vocational mid-career courses must be self-financing. On the one hand industry feels it is already taxed towards the provision of technical education; on the other universities consider they must be free to offer some continuing education courses which they consider to be important — continuing education cannot be entirely "clique-book led". The University Grants Committee is providing limited pump-priming grants to the conventional universities, but in the Open University, receives only loan financing for continuing education. (The initial cost of an OU course (for several thousand students) may involve a commitment of £250,000 to £300,000; the cost of preparing a course for a score of students at a conventional university may not be readily detectable within a block grant.) And of course there is also a financial problem for the students. Not all mature students will get their fees paid in full or will be able to afford to pay for themselves, and those unemployed or changing careers will need assistance.

But can universities provide for all the needs of industry? Here my own university has an undoubted advantage in its use of distance teaching methods. Because the OU brings the learning to the would-be learners in industry, companies have no need to find replacements to finance absent employees, and managers absent on training courses. This replacement problem has long been recognized as a block to releasing people, and has played a considerable part in the SERC's decision to back the OU as the central body for its postgraduate updating scheme. Moreover, distance teaching allows the student to integrate his studies with his work; he remains on the job while he updates his skills — and from his point of view has no need to take his feet off the promotion ladder by assuming himself.

Another set of advantages coming from distance teaching is that the material is largely free-standing and comes packaged as a distinct whole, yet made up of related but large numbers of separate components. This allows integration for some of the components into company training plans as a kind of "spare part service". Further, the manager or group leader who purchases our material as a student may then pass it on to colleagues informally for individual or group use. We know that this happens and accept it. It achieves the objective of professional updating — even if it makes a bit of a nonsense of the Government's self-financing principle.

But there is no room for complacency. My colleague Professor John Meleka, now in charge of the SERC-funded manufacturing systems programme, was formerly director of materials and manufacturing technology at British Leyland; he pointed out that industry is impatient for results, while OU methods of course production are rather slow — it takes a year or two to produce a course. Nonetheless Meleka feels that the university has major strengths to deal with the manufacturing scene, not only in its capacity to cope with new technological challenges and by drawing on industrial case studies

but also in its systems approach and its appreciation of the human factor as a consideration in industrial systems.

The OU now has a direct dialogue with a large number of industrial organizations, establishing their needs and satisfying ourselves that these needs are met by the course material provided. We believe we have begun this dialogue effectively, as exemplified by the demand for our "long" courses in computer science, and our "short" self-study packs on microprocessors for generalist managers and engineers. More than 5,500 people have bought these microprocessor packs, and we believe, on survey evidence, that the total number of users may be four or five times that number. Our open business school will this year produce the first of our "awareness courses" for managers, making them aware of new developments and their impact, and thereby helping to serve one of the priority groups identified by Sir Geoffrey Allen. It is a reflection of growing demand, that when the OU started its continuing education programme in 1973 it was happy to number students in hundreds; now we have some 35,000 a year studying some 140 courses or packages.

But we have monopoly in this kind of training. With their specialist graduate schools in particular areas the traditional universities are well placed to provide short courses for updating people already expert in their field. At the OU we would not expect to compete in highly specialist courses for small numbers of students. We have a more natural role in the functions of "awareness", "broadening" and technology transfer.

However there is not a very sharp division between the OU's contribution and that of the other UK universities, as our SERC cooperative programme shows. We need help from others and are anxious to help others. Expanding continuing education provision in this country is likely to require new structures and delivery systems, and the OU wishes not only to develop its own expertise, but to put it constantly at the service of industry and fellow education providers. Real change is happening in our training and educational updating systems as old patterns, responses and frontiers dissolve, and we all have an interest in directing that change into constructive channels.

So far I have written almost exclusively about the British experience but I have tried to reflect some of the themes that may be developed in the discussion of continuing education at the forthcoming Commonwealth Universities Congress. It will be instructive to learn how far this analysis of development in continuing education in British universities is applicable to other nations in the Commonwealth. I suspect that in two fundamental respects there will be some measure of agreement: first, that continuing education is rapidly evolving from a marginal activity of the universities to one of their principal responsibilities; and second, that within this provision, vocational courses are commanding an ever higher priority.

Thereafter, however, I would expect there to be differences in emphasis between the universities of the industrialized nations and those of the developing countries — differences in the student groups and the subjects they are to be taught.

I also expect there will be differences in the way in which continuing education provision is structured. In the industrialized countries there will be increasing opportunities for new models of education, using multi-media teaching methods. In the developing countries I have no doubt that provision will be at a less sophisticated level, largely because the more limited technological base will constrain the full use of the new communications technology. Nevertheless, distance teaching universities have been and are being established in the Commonwealth and the development of educational provision will itself generate demand for technological development.

Both industrialized nations and developing countries are undergoing rapid and fundamental change. I believe it is now fully accepted that universities have a significant role to play in preparing for and taking part in change through continuing education. The challenge is to make this role effective.

Improving the home front

MALAYSIA

An ambitious programme of expansion for higher education in Malaysia has been mapped out for the next decade, despite some recent financial difficulties facing the country. With a polytechnic sector recently established, a sixth university on the way and a seventh under consideration, the flow of students abroad should be slowed as home facilities improve.

Until 1969, only the University of Malaya existed to provide education to degree level, let alone postgraduate courses. Then, in three years, the University of Science, the National University, the University of Agriculture and the University of Technology were all established, more than doubling the student population in the years.

Now polytechnics have been added to supplement Malaysia's sub-degree provision, an Islamic university has been approved and is at the planning stage, and another university is talked of for Kedah, the Prime Minister's home state. Only a private Chinese university, backed by the wealthy business community which tends to send not privately-sponsored students abroad to study, has failed to get off the ground.

The country is now beginning to normalize relations with the United Kingdom after receding more strongly than any other to the imposition of "full-cost" fees for its students in Britain. Trade penalties and a ban on Government-sponsored students going to British institutions followed the 1980 fees rise, but last year's package of mitigating measures announced by Mr Francis Pym, as foreign secretary, have restored relations to some extent.

Regardless of this, Malaysia's higher education expansion is designed to reduce the need for students to go abroad. Undergraduate places at all the five existing universities are expected to rise above 10,000, which only the University of Malaya approached at present, and which would require a doubling in size for the universities of agriculture and technology.

Only 1,392 postgraduate students were registered in Malaysia in 1980, but this, too, will rise under the expansion programme. The University of Malaya, the most prestigious of the higher education institutions, has an institute of advanced studies, which already is being initiated by the other universities. With its strength in languages, the country's only Royal Professor in the vice-chancellor Uthman Aziz and the largest student population both undergraduate and postgraduate, the university inevitably sets trends.

Soon, however, a radically different institution will be added to the system in the shape of an Islamic university being established with Saudi support and based at Fraser's Hill, near Kuala Lumpur.

Young regimes left in charge

NEW GUINEA

A policy of taking over responsibility for higher education from Australia, which founded Papua New Guinea's two universities in 1963, has left young regimes on the two campuses.

Since independence in the middle of the last decade, Papua New Guinea has reduced its dependence on Australia, although it still receives financial support for the universities. The number of Australian staff, too, has declined, as salary ties have been cut.

The University of Papua New Guinea now offers a wide range of subjects, including medicine, on a 1,000-acre site near Port Moresby. The university has more than 1,500 students. Papua New Guinea's University of Technology, situated on the coast, concentrates on science and technology and has a marginally smaller student population.

The prospect for higher education in India is more of the same — and the same is a bewildering mélange of rapid and haphazard growth, low and still falling standards, increasing student unrest, more teacher militancy as the profession becomes unionized, and structures of university governance whose ineffectiveness, even irrelevance, seem daily to become more and more manifest.

First, growth. In 1951, four years after independence, India had 27 universities; today, it has about 120. Then, there were 360,000 students; now there are well over three million. The university-going population as a percentage of the total 17 to 23 age group was 0.8 then; it is 4 per cent today. There were 542 affiliated colleges then; there are over 33,000 now.

Expansion was meant to be planned, gradual, ensuring that standards were maintained. The University Grants Commission (UGC), set up in 1953, was charged with overseeing it and given certain powers (such as withholding recognition and even grants) to compel adherence to norms. But it has been unable or unwilling to use these sanctions and has usually preferred the gentler but much less effective alternative of persuasion.

The opening of new colleges and universities lies in the hands of provincial governments who have seen in the proliferation of tertiary education the possibility of earning vast political dividends. There is also money to be made by educational entrepreneurs quick to spot the profits that the commercialization of higher education can yield. Recently, the chief minister of Bihar state in eastern India announced that four new universities would be set up (there are six now). Yet, a few days earlier, he had said that only three would be started!

The state already has a large number of "institutes of higher learning", at least one of which is reported to have made about two million rupees (well over £100,000) by way of exorbitant

Student conflict at a haven for Bantu refugees

LESOTHO

by Carolyn Dempster

Calm pervades the campus of the National University of Lesotho, yet this small scenic university nestling at the foot of the Maluti mountains hides a bubbling student interior.

Described as the "most turbulent" university in southern Africa in 1981, NUL has in recent years witnessed inter-student conflict on a scale unequalled at any other southern African university. Yet on every occasion the university has managed to emerge relatively unscathed, growing space.

This year enrolment figures are expected to top 1,200, a far cry from 1945 when NUL (then Plus XII college — a Roman Catholic school for higher education), could boast of fewer than 10 students.

In 1964 the fledgling institution became the University of Basutoland, Bechuanaland protectorate and Swaziland (BBS). After independence the name was changed to the University of Botswana, Lesotho and Swaziland, and in 1976 the trio split and NUL embarked on an ambitious expansion course.

There are currently five faculties: science, social sciences, humanities, education and law, with a faculty of

Growth and militance

INDIA

by A. S. Abraham

opening. The new government in Andhra Pradesh state in south India, for example, headed by the film star-turned-politician, N. T. Rama Rao is going ahead with opening a women's university (the second in the country) despite UGC disapproval on the ground that modern education is not compatible with sexual segregation.

To stem the proliferation of "non-viable" colleges, the UGC said that it would recognize and help to fund only those new ones set up in economically undeveloped areas where a need for a tertiary-level institution had been clearly identified. Despite this, in the 18 months that a particular ministry held office in Orissa state in eastern India, 64 private colleges set up shop. Today, some 200 private colleges have been recognized by the provincial government, while some await recognition. Yet, in the last ten years, no new government college has been started in Orissa.

Provincial governments bent on opening new colleges and universities are not deterred by the UGC's strictures or its withholding of recognition and even grants. In most cases, through political pressures exerted at the federal level (especially where the party in power in a state is the same one in office in New Delhi), the UGC can be persuaded to be more reasonable. In any case, the entrepreneurs setting up the new institutions have ways and means (capitation fees, "donations", tax-deductible loopholes) of keeping their heads well above water, even though the institutions may be "non-viable" in the UGC's calculations.

More rarely, a state government will dip into its own pocket to finance an institution it has set its heart on

Bombay University, for the first time this year after a long gap, was able to hold its examinations and declare the results on time. But to be able to do so, it had to appoint a senior civil servant as a special executive authority, give him sweeping powers and gently ease out the vice-chancellor who was widely held responsible for the mess. The special officer was closely supported by the state governor in his capacity as chancellor of all the state's universities.

Reforms have been attempted and

have sometimes worked. But their overall impact is marginal largely because the places where they work tend to be those where standards are relatively high anyway. Curricula have been changed, for instance, to relate undergraduate courses in the world beyond the campus. Thus, "English composition" has given way to "functional English" and "communications skills". Works by Indian writers in English are beginning to be prescribed for study, not merely Virginia Woolf or E. M. Forster. Schemes to improve the teaching of the natural and social sciences are being implemented.

One major change has been the American-style semester system of work, with internal tests, objective questions and the marking of papers by teachers of the particular course. On the whole, it has worked reasonably well, but complaints are mounting.

One controversial reform that has not yet been tried out in more than a handful of areas is the designating of selected affiliated colleges as autonomous institutions. Tamil Nadu state in south India had ten colleges given autonomous status in 1978/79 for a five-year period.

Inevitably, the idea has been furiously attacked as elitist, with the critics charging that the university authorities throughout the country, having tired of trying to improve higher education across the board, want to mollify a small minority of well-run colleges at the expense of the majority.

The pressure of increasing numbers on colleges and universities has led to two important developments: firstly, student unrest and campus violence and, secondly, teacher militancy. The first has been fostered to a great extent by political parties — not surprisingly, since students have been mobilized for

political purposes ever since the start of the independence movement.

Student politics is one of the main sources of violence on the campus and will long remain so. In May this year, the dean of student welfare at Punjab Agricultural University in Ludhiana, Prithpal Singh, was killed as a result of student feuding that had already caused a student's death a month earlier. The dean's murder was nationally mourned because he was an ex-Olympic hockey star.

But the provincial government has yet to act. What it did do, in April 1980, was to appoint a University Inquiry Commission which has now recommended a number of radical structural reforms to streamline the state's universities. These include banning all strikes as well as university elections, making all appointments, from vice chancellors downwards, strictly on merit and with no regard to caste, and debaring teachers from contesting parliamentary, provincial or civic elections, or otherwise taking part in politics, on or off the campus.

As inflation over the years has deeply eroded the real value of teachers' incomes, they have had to fight a continuous and, on the whole, losing battle for pay rises. Only recently, Delhi University teachers went on a protracted strike to end the stagnation for scores of them that occurs when promotions are blocked and few fresh senior posts are created.

The restructuring of formal education, with two intermediate years of junior college prior to a three-year (previously in many places a four-year) degree course, has meant effective demotions for large numbers of teachers, the alternative to which is retrenchment (there has been some of that in any case). As economic and working conditions worsen, teacher militancy (with students mobilized in the cause) can only grow, even as the authorities try to clamp the lid down. Plenty of trouble clearly lies ahead.

Government's clean sweep

MAURITIUS

One of the first acts of the new government of Mauritius when it came to power last year with a clean sweep in the general election was to establish the National University of Mauritius, bringing together all the island's higher education in a single institution.

The Mauritius Institute of Education and the Mahatma Gandhi Institute were brought into the former University of Mauritius, which was established in 1965 but began developing fully in 1968. Other small institutes may be brought into the new university later.

The incoming government was well aware of the needs of higher education, numbering five professors or lecturers among its ministers, although political differences have since reduced the tally. And some action was needed since poor employment prospects for graduates had led the university to suspend its undergraduate intake for two years before the election.

Dr J. Manrakhan, vice-chancellor of the University of Mauritius, will head the new institution, although other appointments are still to be confirmed.

Dr Manrakhan has published a series of articles outlining his plans for a university truly relevant to the needs of a developing community.

school and have to gain several years working experience before applying, as well as receiving a strong recommendation of suitability from their employers or party organization. There is a separate entry scheme for mature applicants who do not have the requisite examination qualifications. Responsibility for the country's thriving adult education system was removed from the university with the granting of separate status for the Institute of Adult Studies. Dr Manrakhan also houses a polytechnic, which does sub-degree work, and many of the 200 research institutes which have sprung up.

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COMMONWEALTH UNIVERSITIES TODAY

University reopening demand

Public pressure is building up in Kenya for the reopening of the University of Nairobi, with two cohorts of school-leavers now waiting to embark on degree courses.

The university and its associated teacher training institution, Kenyatta College, have been closed since students were accused of taking a leading part in an unsuccessful coup attempt last year. Only the polytechnics and the American-owned International University, in Nairobi, have been open since.

Students were allowed back to sit examinations early this year but the campus was shut again immediately afterwards. A number of students and academics remain in prison, some on lengthy sentences for sedition, although the majority of students detained were released last year.

President Daniel Arap Moi has re-

KENYA

ceived the 400-page report of an inquiry into the university, but this has not been published and no date has been given for a reopening. It is understood that the Government is considering moving some of the departments thought to have been most closely involved in the attempted coup away from Nairobi, but the university is unlikely to reopen before this autumn's elections.

Ironically, President Moi was already intending to expand higher education provision, which nowhere near meets the demand for places, before the troubles. A commission of academics was asked to consider where and how a second university should be established and their report, too, is awaiting action.

Demand outstrips supply in Crown Colony

HONGKONG

Strenuous efforts have been made in recent years to keep up with the near-impossible task of satisfying the demand for higher education in Hong Kong. A new polytechnic and a private university at Macau have joined the three existing institutions serving the territory.

With fewer than 10,000 places available in Hong Kong itself for almost six million people, the pressure on places remains intense and there is relief that special arrangements have been made with the United Kingdom to enable more postgraduates to study at British universities and polytechnics.

A scheme proposed by the Hong Kong government will split the cost of overseas student fees with Britain and restore the traditional flow of students to British institutions.

The latest institution to be set up is a second polytechnic which, like the first, has taken its director from Britain and has opted to go under the umbrella of the Council for National Academic Awards. It is designed to be complementary to the existing polytechnic,

although there will be some overlap in courses.

Hong Kong's first polytechnic, under the directorship of Dr Keith Legge, is larger than either of the island's universities with a student population of about 20,000. It concentrates on technological subjects and was the subject of a recent CNA A visitation.

The long-established University of Hong Kong has pursued a policy of recruiting staff from the colony where before a high proportion of expatriate Britons were employed. It has a high international standing and extreme pressure on places.

Since 1963 it has been accompanied by the Chinese University of Hong Kong, which now has more than 5,000 students on its campus in the New Territories. Unlike the University of Hong Kong, it operates on an entry system similar to the Scottish equivalent, running four-year courses.

The third university, known as the University of South-East Asia, is not associated with the Hong Kong government and is based on the mainland. As a private institution, its higher fees have hindered its speedy development, though it has also now spawned an Open College.

New vice chancellor for islands

SOUTH PACIFIC

The second vice chancellor of the University of the South Pacific takes office in October, when Dr C. C. Alkmsn, who has headed the institution since its establishment in 1968, retires. His successor is to be Mr Geoffrey Caston, secretary general of the British Commonwealth of Vice Chancellors and Principals.

Centred on Fiji and with a second campus in Western Samoa, the university serves the network of islands

in the South Pacific with financial aid from Australia and New Zealand. The "coast campus", which was added in 1977, houses the school of agriculture, while the schools of education, natural resources, and social and economic development are situated near Suva.

A development plan for the university has been under way since 1978, replacing buildings inherited from the Royal New Zealand Air Force, which previously used the main campus as a flying boat base. Extensions for the buildings are also planned for the Gilbert Islands and the Cook Islands.

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Proposals for an open university, supported by academics from the British equivalent several years ago but shelved at the time, were also resurrected by President Moi. But no firm commitment has been made to its establishment.

Not surprisingly, the International University, whose parent institution is in San Diego, California, has struggled to keep pace with substantially increased demand for places since the closure of the University of Nairobi. It has now moved into larger premises. Although the polytechnics at Nairobi and Mombasa have remained open, both are sub-degree institutions.

The effects of the closure are also being felt in other third world countries, since the well-respected university in a hitherto politically stable country attracted foreign students as well as Kenyans.

Autonomy may mean break-up

WEST INDIES

The coming year will be a momentous one for the University of the West Indies (UWI), as preparations start for a major restructuring scheme due to come into effect in October 1984. The plan, which was approved early in July at a meeting of heads of government of the Caribbean community (Caricom), will give greater autonomy to the university's three campuses in Barbados, Jamaica and Trinidad. Some critics, however, fear that the move could lead to the break-up of the university and to the establishment of separate national universities.

The university began life in 1948 as the University College of the West Indies, an affiliate of the University of London; it became a university in its own right in 1962. The original college was of Mona, Jamaica; the Imperial College of Tropical Agriculture at St Augustine, Trinidad, was incorporated in 1960, and the Cave Hill, Barbados, campus was established in 1963.

The university is now a regional institution supported by and serving the three above-named countries, plus Antigua, Anguilla, Bahamas, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Montserrat, St Kitts-Nevis, St Lucia and St Vincent. It is governed by a council representing contributing governments, academic staff and students.

Finance is mainly provided by the governments of Trinidad and Tobago (46 per cent), Jamaica (36) and Barbados (12); the remaining 4 per cent is shared by the other 12 territories. The restructuring plan will give each campus a separate grants committee, while maintaining the central university council and grants committee.

Uneasiness about the changes has been expressed mainly by the smaller islands, which have sought arrangements to ensure that their interests are not overlooked as the three campuses take on more national character.

The most explicit criticism has come from the government of Grenada, which has argued that teaching standards will suffer if the three campuses start to compete for staff by offering pay differentials. Pay scales at Mona are already below the other two campuses, and it is feared that increased autonomy will worsen the differential.

At the beginning of the 1981-82 academic year, UWI had 9,484 students (4,807 men; 4,677 women). The biggest campus was Mona (4,736), followed by St Augustine (3,142) and Cave Hill (3,006). Social sciences was the biggest faculty (2,409), followed by arts and general studies (2,247), natural sciences (1,900), engineering (736), medicine (430), education (555), agriculture (430), law (428). The figures include 1,204 postgraduate students. A further 1,204 postgraduate students are enrolled at the university's regional centres in Barbados, Jamaica and Trinidad.

Twenty years of improving

NEW ZEALAND

Twenty-five years ago a review of the prospects facing New Zealand universities started with a picture of a university system in crisis. The Hughes Parry report of 1959 made it clear that the universities of the time were understaffed, poorly housed and inadequately financed, and that too high a proportion of the students were part-timers.

In 1958, in a country of 2.4 million people, there were 13,335 university students of whom 46 per cent were enrolled for part-time study. A total of 1,166 degrees were conferred that year.

Over the succeeding 25 years the universities mushroomed. They became autonomous institutions in 1962 with the dissolution of the University of New Zealand; their staffing improved; massive building programmes transformed the campuses.

In 1982 only 29 per cent of the 45,311 internal students were part-timers and graduate numbers reached 8,977. A further 8,838 students were enrolled externally with Massey University.

The 1960s were a period of growth and excitement in New Zealand as elsewhere. Growth slowed in the 1970s but student numbers are still rising by about 1,000 a year. More importantly, however, the heady atmosphere of the 1960s gave way in the mid-1970s to a period of retrenchment as New Zealand's economic growth dropped and the universities faced their share of an increasing austerity.

Preoccupations with society gave way to the needs for career preparation as students moved in ever increasing proportions into studies in commerce and the applied sciences.

In 1958 there was no doubt that major changes were needed and there was the will on the part of the government and its successors, the university colleges, and the University Grants Committee to achieve the necessary transformations.

It would certainly be difficult to conceive of changes as dramatic as those that have occurred, and it may equally be true that the scale of past changes was only dimly envisaged by even the most imaginative forecasters.

Auckland University which boasted a library collection of 127,000 volumes in 1958 added its millionth title this year with, as much by planning as coincidence, the ceremonial acquisition of Professor Keith Sinclair's *History of the University of Auckland*.

The library readership has changed markedly. Twenty years ago only one student in four was a woman. Today 44 per cent of the students are women. And the women have moved in ever increasing number into disciplines which were traditionally and overwhelmingly male dominated, in a trend which should continue for some time.

Unemployment about the changes has been expressed mainly by the smaller islands, which have sought arrangements to ensure that their interests are not overlooked as the three campuses take on more national character.

The most explicit criticism has come from the government of Grenada, which has argued that teaching standards will suffer if the three campuses start to compete for staff by offering pay differentials. Pay scales at Mona are already below the other two campuses, and it is feared that increased autonomy will worsen the differential.

At the beginning of the 1981-82 academic year, UWI had 9,484 students (4,807 men; 4,677 women). The biggest campus was Mona (4,736), followed by St Augustine (3,142) and Cave Hill (3,006). Social sciences was the biggest faculty (2,409), followed by arts and general studies (2,247), natural sciences (1,900), engineering (736), medicine (430), education (555), agriculture (430), law (428). The figures include 1,204 postgraduate students. A further 1,204 postgraduate students are enrolled at the university's regional centres in Barbados, Jamaica and Trinidad.

Unemployment about the changes has been expressed mainly by the smaller islands, which have sought arrangements to ensure that their interests are not overlooked as the three campuses take on more national character.

Sixteen per cent of the staff were under 30 in 1969; today only 4 per cent are in that age group.

Without doubt the quality of teaching and research has improved significantly over the past 20 years. Today's universities are much better equipped; provisions have been made by the universities to provide support and training for the teaching faculty; funds for research, though never sufficient to meet the demand, are more readily available; doctoral students were rare in the 1950s and now 140 or so a year complete their degrees.

Postgraduate diplomas have proliferated with some 75 separate diplomas available in 1982 to provide graduates with the chance to add a career-orientated element to general degrees. The growth and growing complexity of the universities has had its administrative consequences. A vice-chancellor today is more likely to be a scientist, engineer or economist by training than a classicist, historian or even lawyer.

Collectively their preoccupations have changed. The 1960s Conference of New Zealand Universities was, in effect, a celebration of autonomy and a studied defence of the right of each university to determine its own destiny within the finances provided.

The key subject at the second (and, so far, last) Conference of Universities in 1974 was the possibility of improving cooperation among the universities in academic planning, advanced studies, research, staff training and the dissemination of information.

Coping with retrenchment might be the key topic in 1983. The climate is, indeed, less congenial. The universities have had to face the 3 per cent cuts imposed on all areas of government spending and the immediate prospect of a period of retrenchment.

Under these circumstances the universities, not unnaturally, are giving a higher profile to research activities which bear more obviously on immediate and publicly appreciable topics.

Some of that immediacy comes from a small but steady increase in external funding of research as the universities and individual academics seek to tap a wider range of funding sources.

Part of the changing profile, however, comes from a heightened need to be seen to be relevant and the associated tendency to publicize their work more vigorously. While contract research is still a minority occupation it is likely to grow more rapidly over the next few years, and in ways which should benefit both the university and the community.

At a national level the universities have been well served by the University Grants Committee under its chairman Dr Alan Johns. The UGC, an independent statutory body, has carefully responded to growing political pressures on the universities.

Quinquennial funding has survived to date, with income augmentations to the universities to compensate for the effects of inflation.

The UGC has had the difficult task of attempting, under close government scrutiny, to persuade the universities to reduce their levels of expenditure on student welfare services, of asking off its staff to reduce the number of staff it has at professional level, and of easing in common conditions of employment for non-academic staff.

In areas like these the UGC has had to encroach on traditional areas of university autonomy, and this tendency seems likely to grow.

Behind the UGC's persuasion has been the threat of more direct government intervention if the universities fell to respond and the universities have had to accept the sometimes unpalatable notion that the preservation of some degree of autonomy may require compliance with government-initiated UGC directions.

That Dr Johns and his committee continue to be held in high regard by the universities is a reflection of the strength of the UGC.

For the longer term, prospects for universities in New Zealand are less easy to capture. Nostalgia still remains for the more lively days of growth in the 1960s, but the universities are slowly adapting to the diminished expectations of the wider community. Meanwhile the universities will need to be on their guard to ensure that creeping vocationalism, and temptations to engage in more "relevant" research, are kept in check.

Hawke government pays for expansion

AUSTRALIA

by Geoff Maslen

The Australian government will provide an extra A\$10m to universities and colleges next year to allow them to enrol an additional 3000 students and employ more staff. The money will be part of an overall A\$31m increase in grants to post-secondary institutions, including tertiary and further education colleges, and will bring the total allocation to tertiary education by the Commonwealth to A\$2100m. The boost in funds is certain to heighten morale within the Australian academic community.

For the first time in more than five years, there is a detectable air of optimism. The view of many academics that the institutions in which they helmed were facing death by a thousand cuts disappeared with the fall of the Fraser government in March.

In place of the gloom there has come a sense of hope, inspired by promises made before the election by the new prime minister, Mr Bob Hawke, and assurances since then by the minister for education and youth affairs, Senator Susan Ryan, that - among other things - Labour will:

- commit more money to higher education;
- provide an extra 25,000 student places in universities and colleges of advanced education over the next three years.

● allocate extra finance to selected institutions to increase enrolments in approved areas, with special emphasis given to disadvantaged groups and to off-campus students.

● increase the tertiary education allowance for eligible students so that the maximum grant will equal the single, adult unemployment benefit.

● increase the number of academic staff. Although the government had promised to award 300 research fellowships, this has not yet come through. Instead, universities will be able to employ young scholars by using some of the A\$10m allocated to increase the number of student places.

According to Senator Ryan: "Our first task is to restore the credibility of higher education with the general public. There has been a systematic talking down of higher education by the former government which reflected its ideology and was manifested in such things as the creation of centres of excellence which seemed to indicate that the government was only interested in certain types of higher education. We, on the other hand, have a much more general commitment to this area."

Senator Ryan says the government is conscious of the attention which has attracted tertiary education over the past five years and accepts that unless Australia encourages people to go into higher education, the prospects for long-term economic recovery are poor.

The anticipation generated in academic circles by these pronouncements is none the less tempered with caution, for the task facing the Hawke government in rejuvenating higher education - and restoring confidence in it - is enormous. The general decline that occurred between 1975 and 1982 affected almost every aspect of university and college life and, with the government facing massive budget deficits over the next three years, it may take more than one term in office to reverse.

Building programmes alone pose considerable problems. Estimates by the Universities' Council, for instance, claim that 12 per cent of university buildings need major renovation and another one in 20 would be better demolished.

In staffing, too, there are many areas of serious concern. After an explosive growth in the 1960s and early 1970s, universities entered a steady state situation which, together with the later decline, is leading to a hardening of the academic arteries and eventually, a greying of academics.

The rapid expansion in recruitment of young graduates to tenured positions in universities and colleges in the past, has now led to a serious imbalance in the age structure of academic staff.

Both the Australian Vice-Chancellors' Committee and the Federation of Australian University Staff Associations have called for the introduction of an early retirement scheme as part of a series of proposals intended to create greater flexibility in university staffing. The vice chancellors have recommended a grants scheme to encourage academics aged 55 and over to retire that would cost A\$12m a year over the next three years.

The federations says such a scheme needs to be coupled with the introduction of part-time permanent appointments, shared appointments and more exchanges programmes with industry. But, the federations claims, universities remain inflexibly inflexible when these sorts of suggestions are put to them.

The vice chancellors' in their back-ground paper, point to a further problem affecting staff vitality and morale: the difficulty faced by Australian graduates in obtaining overseas appointments, even for the short term. Australian universities aim to recruit academic staff of the highest possible calibre as judged by international standards, the vice chancellors say. Positions are therefore normally advertised overseas as well as in Australia.

"It is generally believed that to restrict academic appointments to Australian citizens would be detrimental to the free flow of knowledge and the maintenance of the highest standards of scholarship and research," say the vice chancellors. But they find it disturbing that Australian academics then face restrictions in obtaining reciprocal access to positions in overseas countries, particularly Britain, America and Canada.

And if the problems are not redressed in this period, a subsequent cycle of problems will arise in the first decade of the next century and perpetuate the imbalance for future generations. Current age profiles of full-time teaching and research staff in Australian universities and colleges of advanced education reveal a peak concentration in the 35 to 44 age bracket, with three out of four academics under 45 years of age, and the number aged 55 and over relatively small.

According to the vice chancellors' committee, with only one in ten academics due to retire within the next decade, staff turnover throughout the 1980s and until the mid-1990s is expected to be only a third to a half of the ideal turnover rate.

Financial stringency has also resulted in universities employing increasing numbers of young academics on short-term contracts. Indeed the proportion of university staff on fixed term or non-renewable contracts has doubled since 1973, and although tutors and senior tutors have, for the most part, always held untenured posts, increasing numbers of academics at the lecturer level are also being employed for limited periods.

On average, more than 20 per cent of lecturers now hold non-tenured positions, compared with just 12 per cent 10 years ago. Altogether, about one in four of Australia's 11,000 university

academics lack the security of employment that the majority of Australians take for granted.

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Violence began on campus

SRI LANKA

Universities in Sri Lanka have been unable to avoid the disturbances which have brought the island on to the front pages of newspapers all over the world this summer.

Indeed, incidents between students in May and June proved forerunners to the more serious violence which has taken place elsewhere since. Tamil undergraduates fled the halls of residence at the University of Peradeniya following an attack by Sinhalese students angry at the defacing of English and Sinhalese notices. Some were attacked and their rooms ransacked in the incidents.

Another incident at the University of Colombo led to Tamil students leaving a hostel. President J. R. Jayewardene, who takes personal responsibility for higher education, was kept informed of developments, which included the appointment of a committee of inquiry.

He has since removed all vice chancellors and principals of university colleges and reappointed them with stronger powers in an attempt to maintain discipline. They were given the powers previously vested in university councils after further disturbances at Peradeniya.

The succession of incidents, which followed earlier violence between students and local residents at the University of Sir Jayawardhanapura leading to the temporary closure of the university and the replacement of the vice chancellor, have blighted an otherwise successful period of expansion. The annual intake of full-time students at the seven conventional universities rose from 3,500 to 5,500 between 1976 and last year, while the Open University founded in 1980, is expecting 18,000 students by the end of this year.

By 1989, the Open University is planned to have 35,000 students taking its largely sub-degree courses. A £14m expansion programme was announced earlier this year. Full-time enrolments have risen sharply since the decision to create autonomous universities from the six campuses of the University of Sri Lanka, created in 1972. The reversion to separate institutions, in 1978, was accompanied by the establishment of the Ruhuna University College and later followed by the creation of the University College of Batticaloa.

With pressure on places remaining heavy despite the expansion, controversy has centred on the selection system, which tries to ensure an even geographical spread through the adoption of quotas. The inevitable result is the recruitment of some students less well qualified than others who happen to live in an area which is over-subscribed.

TWENTIETH-CENTURY FRENCH LITERATURE

1920-1970

by GERMAINE BRÉE

In her survey of French literature from 1920-1970, Germaine Brée demonstrates that to understand the literature of that period we must consider it in its social and historical context. A far overview of the historical, political, and social climate in post-War France, Brée examines the literary life. She focuses on the intellectual currents that affected literature - those in painting, cinema, popular culture, linguistics, psychoanalysis, and philosophy - and ends with the development of the novel, poetry, and theatre. Brée anchors her analysis on eight authors whose work she feels is emblematic of the time: Cocteau, Breton, Malraux, Céline, de Beauvoir, Camus, Cuzac, and Simon. *Twentieth-Century French Literature* includes a Dictionary of Authors that provides biographical as well as biographical information, and a revised bibliography. Translated by Louise Guiney.

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COMMONWEALTH UNIVERSITIES TODAY

Social pressure to be a success

by Mary Price

The National University of Singapore was established in 1980 following the merger of the University of Singapore and Nanyang University and since then has been undergoing an expansion programme which will take it to 10,000 students in 1985 to 4,500 students in 1985.

With this increase in student numbers, the NUS is actively recruiting academic staff both from other countries in Asia and from the West, particularly from the USA, Australia and the UK in order to achieve an overall staff-student ratio of 1:10. In May 1983 there were just over 1,000 academic staff, 49 per cent of whom were expatriates.

As in much of Asia, educational qualifications are much sought after in Singapore and there is considerable social pressure on individuals to achieve the highest possible qualifications with the highest possible grades. In addition to that pressure, which is traditional among the Chinese who form 77 per cent of the population of 2.4 million, the government policy of turning Singapore into the high technology resource centre of South East Asia by the end of this decade has caused a move away from labour intensive industries towards a highly computerized, technical industrial base. This is seen as essential in a small island republic which has no natural resources but which because of its location and deepwater harbour is the second busiest port in the world.

Those factors, as well as other local developments such as the growth in the number of high rise buildings and the construction of a mass rapid transit system (underground railway), have added computing science and most branches of engineering to the traditionally high status and highly remunerated professions of medicine and law.

Consequently at secondary school level the past few years have seen an increasingly strong trend towards high status jobs. Indeed the trend has become so marked that the government now awards scholarships to encourage students with high O level scores in science to take arts A levels simply to ensure that some of the brightest students look for careers in the arts, social sciences and management.

The trend continues at university level although the most popular course is still medicine and the real prospect of all the students with the highest A level scores being concentrated in that one faculty has led to a quota system being applied whereby a proportion of applicants with maximum scores (ie four grade As at A level) are allocated to other faculties while a number of students with lower scores will get into medicine. The annual effect within the university may be to spread talent across disciplines, the effect outside, judging by letters to newspapers, is ill-feeling and disappointment.

Issues such as the medicine quota are very sensitive in Singapore where the university is obliged to follow manpower projections laid down by the government, projections which may vary considerably from year to year and which are not published. The NUS may be controlled as directly by government as universities in some other Asian countries are but the link is more direct than for British or American universities and the NUS is very conscious of its role as the only university in a country which could until recently claim to be "developing".

Meeting a particular need

ZIMBABWE

Since independence, large amounts of aid, mostly from Britain, have been put into developing a university which will serve the particular manpower needs of Zimbabwe.

After a transitional period under an expatriate vice chancellor, the university is now in the charge of Dr W. J. Kamba. Opened in 1981 as the University of Rhodesia and Nyasaland, its subsequent Royal Charter was re-

named unaltered as the basic constitutional instrument of the University of Zimbabwe, which was formed in 1980.

Like all institutions in Zimbabwe, the university has gone through a period of "Africanization" but many white staff remain, including the vice-chancellor, Professor G. Bond.

Student numbers are expected to expand considerably from the 1980 figures of little more than 2,000, while the Institute of Adult Education copes with increasing demand for off-campus programmes.

Preference for admission to courses, which are all undergraduate, is given to "worker-students".

SINGAPORE

Part of the role of a university closely linked to government plans and requirements for trained personnel can be clearly identified in the development of the Nanyang Technological Institute, which is scheduled to become a Technological University by 1985. In developing various professions and institutions to meet the needs of Singapore, systems in other countries are examined and sometimes adopted for local conditions.

What is seen as a western problem of producing graduate engineers with good theoretical backgrounds but with insufficient practical experience has led to the creation of the NTI and a Singaporean solution. Engineering students are admitted to the university where they study for one year; at the end of that year, those with the best grades and who are regarded as having research potential remain at the NTI. The rest go on to the NTI where they are given a practice-oriented training. Whether this will produce the desired pool of graduates able to relate theory to practice and vice versa remains to be seen.

Another problem facing the NUS is research. Funds are limited and by western standards very low compared with the university's budget as a whole. It is intended that eventually 5 per cent of the university's budget will be spent on research but no fixed date has been given for that aim.

There is also a debate on the optimum balance between pure and applied research, certainly at present priority is given to applied research as being of "relevance to Singapore" but the NUS is aware that if it wishes to be recognized internationally as a research as well as a teaching university, it must in the long-term make more allowance for research as a whole and for "pure" research in particular.

University expansion

BANGLADESH

A new Islamic University and four university colleges are to be added to the higher education system in Bangladesh under the country's second five-year plan.

They are intended to join the three universities based in the capital of Dhaka, and three others, at Mymensingh, Chittagong and Rajshahi. The Islamic University will be located in Khulna, the southernmost zone which is the only one without a university at present, while the university colleges are based on existing government colleges.

Other colleges remain affiliated to the various universities, with attendant controversy over the standard of facilities available for degree work. A number have folded under financial pressure as the cost of higher education increased beyond the means of a sufficient body of students.

The total number of students within the universities themselves had passed 30,000 by the beginning of the decade, the two largest centres being the University of Dhaka (12,000) and Rajshahi (8,000). The many colleges swelled the numbers so much that Dhaka alone registered almost 68,000 and the total far exceeded 100,000.

The Leverhulme programme of study into the future of higher education was organised by the Society for Research into Higher Education with a grant from the Leverhulme Trust and further grants were made by the Guibankian Foundation and the Department of Education and Science. The programme consisted of eight seminars the first in April 1981 and the last in September 1982.

An edited four-page version of the final report is now available in reprint form (first published in The Times Higher Education Supplement on 27th May, 1983) price 25p. Inquiries should be addressed to Frances Goddard, The Times Supplements, Priory House, St John's Lane, London EC1M 4BX. Cheques/postal orders should be made payable to Times Newspapers Limited (no cash please).

NIGERIA

No country in the Commonwealth has matched the pace of expansion in higher education set by Nigeria in recent years. Three waves of development, begun in the 1960s have raised the number of universities from one in the start of that decade to 26 now.

Pursuing a policy of providing a university for each state, the government has supported the establishment of 20 federal universities, while there are a further six state institutions. Although the expansion was undertaken before declining oil revenues began to undermine Nigeria's economic position, the many new institutions have continued to establish themselves.

There is even a likelihood of demands for more universities if the number of states is increased in line with proposals now under discussion, which would see the total rise from 19 to 45. No further expansion of higher education institutions is planned at present, but more modest increase in the number of states would be bound to renew pressure for a rethink.

The federal universities are divided into 13 broadly-based institutions and seven technological universities which

formed the last wave of development and some of which are not fully operational yet. Two have not begun teaching while a third only accepted its first students in February.

All the technological universities were designed since 1980, hard on the heels of the six general institutions founded in the mid-1970s, at Bayero, Calabar, Ilorin, Jos, Maiduguri and Port Harcourt. State universities, too, have continued to appear but are excluded from the national network which is publicized abroad.

Ibadan, which was the first Nigerian institution with university status (in a special relationship with the University of London), is still regarded as the leading university, although the new establishments have proved a drain on senior staff. It now has some 8,000 full-time students - fewer than the universities of Lagos and Ife and of comparable size to the University of Nigeria, which is also based in the capital.

Many of the newer institutions have student numbers targets which seem unrealistically high in the light of the most recent projections of demand. Insufficient numbers of school leavers have qualifications for the science and technology courses to which the government gives highest priority.

Revamped institution grows

on three sites

ZAMBIA

The University of Zambia is now into the fourth year of a new phase of development, set under way by an Act of Parliament in 1979.

The Act laid down plans for a single university run on three campuses, only one of which was operational at the time. A second, at Kitwe, serving the copper belt, had opened a year earlier at a temporary location. The third was to be at Solwezi, in the north-west of the country.

Headquarters for the revamped institution - and the largest campus - remains just outside the capital of Lusaka, where there are plans for extensions to the medical school to incorporate dentistry and pharmacy and to the agricultural, engineering

Unbeatable record of a university per state

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and mining schools. It is also intended to provide a school of veterinary medicine.

The university was set up in 1964 on the recommendation of a group chaired by the late Sir John Lockwood. Under the vice-chancellor, Dr J. M. Mwanza, student numbers have expanded to around 4,000, most of whom are on the Ridgeway campus at Lusaka.

As well as housing a number of research institutes, including the Institute for African Studies, a rural development studies bureau and an institute of human relations, the university also includes a centre for continuing education. This uses radio and television as well as lectures and correspondence courses to bring education to the public, and a network of resident tutors organize seminars and workshops in the main provincial centres.

The prolonged economic crisis gripping Guyana, combined with heavy-handed political control, has been reflected at the University of Guyana in periodic upheaval. The most significant recent sign of discontent was in November 1982, when the majority of academic staff boycotted the annual

graduation ceremony in protest at the sacking of two lecturers, and the university's vice-chancellor, Dr Dennis Irvine, announced his resignation.

Addressing the ceremony, Dr Irvine said: "I came fired with enthusiasm, but... I am going with resignation. A Jamaican, he had been in the post for 13 years.

Of the two lecturers, one was subsequently reinstated; the other, who was known as an active member of the

Guyana Human Rights Association, was not. Students who picketed the ceremony issued a statement complaining of "the crude destruction of professionalism, the absence of job satisfaction, and the death of academic freedom" at the university.

Founded in 1963, the university in 1982/83 academic year had 1,766 students (1,183 men, 583 women); there were 1,335 full-time and 431 part-time students. The university

offers four-year first degree courses, plus higher degrees, a part-time BEd course, and various diplomas.

It is governed by a council of which a majority of members are appointed by government; the council includes government ministers and heads of state corporations. The student body and academic board are represented, and four members represent the University of the West Indies and universities in Canada, the UK and the US.

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COMMONWEALTH UNIVERSITIES TODAY

Putting the accent on the positive

CANADA

Canada's universities will open their doors to the public this autumn in an attempt to convert taxpayers and politicians to the cause of higher education. Worried that their role is misunderstood and their value underrated, the universities are staging a week long public awareness campaign.

National Universities Week in October represents a shift in emphasis for Canada's beleaguered universities. Their shrill cries for increased funding have gone largely unnoticed by a populace facing high unemployment and painful cuts in basic social services. "Universities could have developed an image of screaming for money," said Allan K. Gillmore, executive director of the Association of Canadian Colleges and Universities. "Instead, we want to present a positive image to the public. National Universities Week is not a panacea and does not get rid of the problem of under-funding, but we hope it will create an understanding and that people will be more likely to be supportive."

Universities are also increasingly looking to the private sector for support. A corporate Higher Education Forum, modelled on its American equivalent, held its first meeting in Montreal in May and future meetings are already planned. In April, the Institute for Research on Public Policy joined forces with a group of Canadian faculty associations to sponsor a conference in Edmonton entitled "The business community and the university: the need for collaboration."

The public and many of our own students and graduates do not understand universities," says Howard K. Petch, president of the University of Victoria. "They see them as job-oriented, degree-granting colleges. They don't grasp the importance of scholarship and research. As a result, politicians have discovered that they can make cuts in post-secondary funding without a public outcry."

Government responses to the recession have already cut deeply into university budgets in most provinces, with higher education suffering a disproportionate share of public spending cuts. Even within the education sector, post-secondary institutions in many parts of the country have seen their operating grants rise only slightly in real dollars over the past five to 10 years.

The lack of funds has brought enrolment quotas and hiring freezes to all but a handful of institutions. And the

graduation ceremony in protest at the sacking of two lecturers, and the university's vice-chancellor, Dr Dennis Irvine, announced his resignation.

Addressing the ceremony, Dr Irvine said: "I came fired with enthusiasm, but... I am going with resignation. A Jamaican, he had been in the post for 13 years.

Of the two lecturers, one was subsequently reinstated; the other, who was known as an active member of the

Guyana Human Rights Association, was not. Students who picketed the ceremony issued a statement complaining of "the crude destruction of professionalism, the absence of job satisfaction, and the death of academic freedom" at the university.

Founded in 1963, the university in 1982/83 academic year had 1,766 students (1,183 men, 583 women); there were 1,335 full-time and 431 part-time students. The university

offers four-year first degree courses, plus higher degrees, a part-time BEd course, and various diplomas.

It is governed by a council of which a majority of members are appointed by government; the council includes government ministers and heads of state corporations. The student body and academic board are represented, and four members represent the University of the West Indies and universities in Canada, the UK and the US.

of the bitter disputes could prove harmful to their interests. With most research projects funded through one of three federal granting agencies, support has not been a subject of federal provincial dispute, except in Quebec where parallel structures exist. Levels of funding, however, remain controversial.

Block grants for operating assistance, budget allocations for the three research councils were originally legislated to follow the federal government's six and five programme. The Medical Research Council and the Natural Sciences and Engineering Research Council, were actively expanded earlier this summer when additional funding over two years was announced for each of the agencies.

The £136m now promised for the Natural Sciences and Engineering Research Council for 1983/84, which is 18 per cent more than it received in 1982/83, illustrates the government's new commitment to science and technology. Through the Medical Research Council, health science has also received a boost. The £72m for 1983/84 is 26 per cent higher than the 1982/83 allocation.

Only the Social Sciences and Humanities Research Council remains tied to the six and five programme, at least for 1983/84. Its grant of nearly £32m is a 5.9 per cent increase on 1982/83. If approved by the federal government, the five-year plan beginning in 1984/85 could exempt the council from the restraint programme's second year.

This arrangement is one of many sources of friction between the two levels of government. The national government wants a say in how its money is spent and political credit for its investment. The provinces, ever jealous of their constitutional jurisdictions, are reluctant to cede any decision they have the power to make in the education field.

Tensions could increase during the next two years as federal and provincial ministries responsible for higher education attempt to hammer out a new agreement. Universities, fearing an escalation of the financial and jurisdictional squabbles that have wedged them between the two levels of government, worry that a continuation

of the Guyana Human Rights Association, was not. Students who picketed the ceremony issued a statement complaining of "the crude destruction of professionalism, the absence of job satisfaction, and the death of academic freedom" at the university.

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years will be to find adequate funds to fulfil their role without allowing quality to suffer. "So far, the Canadian system has managed remarkably well. But we have to find ways to maintain our standards of excellence if the fiscal restraint of the past 10 years continues indefinitely."

Faced with shrinking tax revenues, governments are intervening in university operations in the name of restraint. In British Columbia, for example, the provincial legislature is now studying a series of bills designed to dismantle the job security throughout the government service. Academic tenure is expected to be one of the casualties of the legislation, which also permits dismissals without cause or due process and gives the government increased administrative and curricular powers in the province's community colleges. Last year, Quebec faculty were forced to return a negotiated pay increase through temporary wage cuts and then had new three-year contracts imposed on them by law.

Governments have also tightened their grip on post-secondary institutions in subtler ways. Rationalization has become a political catch phrase across Canada as provincial education ministries attempt to control or eliminate duplication of expensive programmes and facilities. Universities themselves have been promoting joint programmes and research for a number of years, but have become nervous of government suggestions that entire faculties, perhaps even institutions, may have to be sacrificed in the name of rationalization and restraint.

Political influence over Canadian universities is minimal compared to other countries, but the trend towards direct government involvement clearly has made universities worried about the future of academic freedom.

Fiscal restraint has also called into question government policies on accessibility. "Blatant may yet great back into our universities because of economic realities," says Gillmore. "It's certainly cheaper, but it may not be politically attractive."

While Gillmore acknowledges that the academic situation may be contributing to the increased interest in university education, he is convinced that there are other reasons. Enormous pressures may be more acute in job-related courses but students are again interested in areas of no job guarantees, like education and the humanities.

Economic crisis plus political control equals upheaval

offers four-year first degree courses, plus higher degrees, a part-time BEd course, and various diplomas.

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EDUCATION IN A MULTICULTURAL SOCIETY

General Editor: Maurice Craff

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Viv Edwards

The linguistic diversity that has developed in British classrooms over the past 20 years is viewed in this book not as a problem, but as a challenge and a resource, affecting the teaching not only of ethnic minority children in inner city schools but of children in all schools. Concise chapters summarize, suggest, for further reading, and key addresses all help to provide a readable, interesting and helpful review of the issues now confronting so many classroom teachers.

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IDS

Institute of Development Studies. The IDS is a national centre concerned with Third World development and education between rich and poor countries. Recent publications include: *Europe and the South in the 1980s*. Edited by Christopher Brown. Batsford vol 14 no 3, July 1983. £2.75 + £2.00 p.p. *Sexual Industrialization: Women's Jobs in Third World Export Manufacturing - the case of the Moroccan Clothing Industry*. Susan J. Aaronson. Batsford vol 15 no 1, 12.75 + £2.00 p.p. *Development Studies in the UK: a Guide to Postgraduate Undergraduate Courses*. Batsford vol 16 no 1, 12.75 + £2.00 p.p. *Individuals 21*. Batsford vol 17 no 1, 12.75 + £2.00 p.p. *South in 84*. Lavinia, Mexico, Japan and Britain, this 42 minute film records the inauguration of education. Video £20.70 + £4.00 p.p. Film £20.00 + £4.00 p.p. For catalogue, or bibliography, information and orders contact: IDS Publications, The Institute of Development Studies at the University of Sussex, Brighton BN1 9RE, England. Tel: (01273) 665151

THES

Special Book and Journal Review Numbers for September

Sept 16 Reviews of New Journals in the Sciences

Sept 23 Education Books

Sept 30 Economics Books

The author is secretary general of the Association of Commonwealth Universities.

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Overseas

KUWAIT

University of
Kuwait Health Science Centre
Faculty of Medicine

MEDICAL SCIENCE AND
CLINICAL APPOINTMENTS

Applications are invited for the following appointments in the Faculty of Medicine:

Anatomy
Assistant Professor in Gross Anatomy. 2 posts
Candidates should have sufficient experience in teaching of topographic anatomy in addition to one other discipline of anatomy, e.g. Histology, Embryology or Neuroscience. He should be able to conduct classes independently for medical, dental, allied health and graduate students. Candidates are also expected to have a proven record of research excellence in the specialty preferably in the morphological sciences e.g. ultrastructure. Preference for the above posts will be given to suitable, medically qualified candidates.

Community Medicine
Assistant/Associate Professor of Occupational/Environmental Hygiene in the Department of Community Medicine and Behavioural Sciences. 1 post
Candidate should be academically qualified and able enough to organise teaching to undergraduates and postgraduate level.

Medicine
a. Professor of Dermatology 1 post
b. Associate Professor of Infectious Diseases 1 post
c. Associate Professor of Endocrinology 1 post
d. Associate Professor of Respiratory Medicine 1 post
e. Associate Professor of Nephrology 1 post
Candidates will be expected also to have a general medicine commitment.
1. Non-Medical Assistant Professor. 2 posts
Candidate would be responsible for the Lipid laboratory and the other should have enough experience in general biochemistry and radio immunoassay techniques.

Microbiology
a. Clinical Microbiologist at Associate or Full Professor grade. 1 post
The candidate should be medically qualified.
b. Microbial Geneticist in Microbial genetics at Assistant Professor grade. 1 post
Candidate should be medically qualified and efficiently able to teach undergraduates and postgraduate students.

Paediatrics
Professor/Associate/Assistant Professor in general paediatrics. 3 posts
Experience is required.

Physiology
Assistant Professor (Neurophysiology) 1 post
Candidate must have a broad background in general neurophysiology with potential for a balanced contribution towards teaching and research development.

Pathology
Full Professor, Clinical Chemistry 1 post
Associate Professor, Histopathology 1 post
Full Professor, Histology 1 post
Associate Professor, Haematology 1 post

Pharmacology
a. One Assistant/Associate Professor of Pharmacology. 1 post
Candidates should have done research in Cardiovascular Pharmacology as well as having adequate ability to teach undergraduate and graduate pharmacology.
b. Professor of Clinical Toxicology-Pharmacology 1 post
Candidate should have adequate experience in the field of clinical toxicology (drug monitoring and poison control). Teaching experience in Pharmacology/Toxicology is also required.

Gynaecology and Obstetrics
a. Full Professor 1 post
b. Associate Professor 1 post
c. Assistant Professor 1 post
Candidates must be medically qualified and have suitable clinical and teaching experience. A knowledge of Arabic will have some weight during the selection process.

Radiology and Nuclear Medicine
a. Associate Professor in Radiopharmacy 1 post
b. Assistant Professor in Radiopharmacy 1 post

c. Assistant Professor in Clinical Nuclear Medicine 2 posts
Experience, research and ability to teach are highly required.

Medical Physics
a. Assistant Professor to work with the Medical Physics Group in the Department of Radiology and Nuclear Medicine 1 post
Candidate must have involved in undergraduates and postgraduate teaching and basic and clinical research. Knowledge of computers applied to medicine is desirable.

Surgery
a. Professor in Plastic and Reconstructive Surgery 1 post
b. Professor in Orthopedic Surgery 1 post
c. Assistant Professor in Orthopedic Surgery 1 post
d. Professor in Neurosurgery 1 post
e. Associate Professor in Neurosurgery 1 post
f. Assistant Professor in Neurosurgery 1 post
g. Professor of ENT Surgery 1 post
h. Associate Professor in ENT Surgery 1 post
Candidates for surgical posts should have at least 5 years' clinical and teaching experience in their respective specialties.

Requirements for appointment
Applicants should possess a Ph.D. or higher professional qualification, in their respective specialty and have conducted and published research in their field. Professors should have 14 years' experience, 4 as an associate professor or its equivalent, i.e. senior lecturer or reader. Associate Professor should have 9 years' experience, 4 as an assistant professor or its equivalent, i.e. lecturer.

Conditions of appointment
Salaries - Total monthly salaries will be within the following ranges, according to qualifications and experience (1 KD = 22.2, US\$3.4 approx.).
Professors with clinical appointments = KD 1,210-1,370 (8 increments).
Professors medically qualified with medical science appointments = KD 1,140-1,300 (8 increments).
Professors non-medically qualified = KD 1,070-1,230 (8 increments).
Associate Professors with clinical appointments = KD 980-1,140 (8 increments).
Associate Professors medically qualified with medical science appointments = KD 932-1,092 (8 increments).
Associate Professors non-medically qualified = KD 875-1,035 (8 increments).
Assistant Professors with clinical appointments = KD 788-928 (8 increments).
Assistant Professors medically qualified with medical science appointments = 724-884 (8 increments).
Assistant Professors non-medically qualified = KD 680-840 (8 increments).

Clinical supplements: In addition to the above University salaries there will be a monthly clinical supplement paid by the Ministry of Public Health for ten months a year to medical school staff with clinical service commitments. These are:
Professor and Chairman KD 250
Professor KD 200
Associate Professor KD 150
Assistant Professor KD 100
Conference: A member is entitled to attend one academic conference a year which would be subject to the University rules and regulations.
Gratuity: There is a gratuity of one month basic salary for each year employed payable on termination of contract.
Housing: Suitably furnished, air-conditioned accommodation, electricity and water free of charge.
Medical care: Free, comprehensive treatment is available in Kuwait under the State Health Service.
Travel: Air tickets are provided from the country of recruitment for the appointee, spouse and up to three dependent children under 20 years. Thereafter, return air tickets are issued annually to the country of citizenship or permanent residence. On termination of contract, air tickets are provided to the country of recruitment. A baggage and freight allowance is also provided.
Vacation: Sixty days paid annual leave and various national holidays.
Education: This is provided free in State schools where the instruction is in Arabic. Staff who have to send their children to non-Arabic schools in Kuwait will have the tuition fees of up to a maximum of three met by the University.
Taxation: There is no income tax in Kuwait. Currency is transferable without restriction.

Method of application
Curriculum vitae in duplicate, which should include the names of three referees, personal particulars, qualifications with dates, career history, teaching experience, research accomplishments and, where appropriate clinical experience should be sent to:

The Dean
Faculty of Medicine
University of Kuwait Health Science Centre
PO Box 24523
Safat, Kuwait
to arrive no later than 30th October 1983.

UNIVERSITY OF KUWAIT

HEALTH SCIENCE CENTRE
FACULTY OF ALLIED HEALTH
SCIENCES AND NURSING

APPOINTMENTS IN
ALLIED HEALTH SCIENCES

Applications are invited for the following appointments in the Allied Health Sciences programmes. These are university-based degree programmes, with practical training carried out in the Hospitals of the Ministry of Public Health. The language of instruction is English:

Deputy Director in Radiologic Technology
Assistant Directors in Radiologic Technology
(2 posts)

Deputy Director or Assistant Director in Medical Records Administration
Assistant Director in Medical Laboratory Technology specializing in Microbiology and Immunology

The staff appointed will take part in the theoretical and practical teaching, and development and management of their respective programmes. The Deputy Directors will also serve as deputy to the Director of their respective programmes.

Requirements for appointment
Deputy Directors should hold the highest professional qualification in the field; be licensed to practice the profession; have at least 10 years experience of practice; have at least 5 years' teaching experience.
Assistant Directors should hold the highest professional qualification in the field; be licensed to practice the profession; have at least 5 years' experience of practice; have 2 years' teaching experience.

Conditions of appointment
Salary: Total monthly salaries will be within the following scales according to qualifications and experience (KD 1 = 22.2, US\$ 3.4 approximately).
Deputy Director: KD 570-720
Assistant Director: KD 470-620

In addition, there will be a monthly supplement of KD 100 for 10 months a year paid by the Ministry of Public Health. There is no income tax in Kuwait and currency is transferable without restriction. Free furnished, air-conditioned accommodation is provided and electricity and water supplied free of charge. Sixty days summer leave for each completed year of employment, and annual economy class return air tickets to the country of citizenship or permanent residence are provided for the appointee, spouse and three dependent children under 24. Comprehensive medical treatment is available under the State Health Service.

Applications in duplicate, including full curriculum vitae, I recent passport photographs and the names and addresses of three referees, should be sent to: The Dean, Faculty of Allied Health Sciences and Nursing, University of Kuwait, PO Box 24523, Safat, Kuwait to arrive no later than 15th November 1983.

DARWIN COMMUNITY COLLEGE

SCHOOL OF GENERAL STUDIES

LECTURER GRADE I
Educational Psychology

Position No. GS 56
Salary Range:
\$522,430-\$525,648; \$526,251-\$529,467 pa

This new position within the College's Department of Education Studies is offered as a tenure position.
DUTIES: The successful applicant will be required to teach internal and external Educational Psychology units and other appropriate units to undergraduate and postgraduate students in the College's Diploma of Teaching, Bachelor of Education and the Graduate Diploma in Education courses.
QUALIFICATIONS: Minimum qualifications for this position are possession of a good Honours Degree in Psychology together with teaching qualifications.
Desirable additional qualifications include a relevant higher degree in Psychology, together with tertiary teaching experience and eligibility for membership of the Australian Psychological Society or its equivalent.

Applicants with extensive relevant school experience as an Educational Psychologist and/or in Special Education and/or expertise in the area of cross-cultural psychology will be given serious consideration. School teaching experience and/or ability to lecture in a curriculum area would be advantageous.
COMMENCING DATE: As an early appointment to this position is envisaged, applicants should advise their earliest possible starting date.
CONDITIONS OF SERVICE: In addition to salary, a district allowance of \$32,080 pa (with dependent) or \$31,176 pa (without dependent) is payable. A copy of the College's conditions of service, together with an information statement on the above position and the department will be forwarded on receipt of application.

APPLICATIONS: Applications, in black ink, in duplicate, including full personal details, qualifications, previous appointments and experience, the names and telephone numbers of three referees, together with a telephone number where applicants can be contacted, should be forwarded to:

The Senior Personnel Officer
DARWIN COMMUNITY COLLEGE
PO Box 100
CASUARINA, N.T. 5725, AUSTRALIA
Closing date 31st August 1983

Overseas

SOCIALIST PEOPLE'S
LIBYAN ARAB JAMAHIRIYA

THE HIGHER INSTITUTE OF
MECHANICAL AND ELECTRICAL ENGINEERING
HOON, LIBYA

This is a newly established institute whose aim is to produce well-qualified graduates and establish research, mainly in areas which will contribute to national industry.

I PROFESSORS AND LECTURERS

The Institute is looking for well-qualified and experienced candidates with drive and initiative who will be responsible for teaching and developing courses. Applicants must have an MSc or PhD or equivalent qualification. Preference will be given to candidates with some industrial experience. The main fields of interests are as follows:

- DEPARTMENT OF MECHANICAL ENGINEERING
Thermal engineering, engineering mechanics, production technology, workshop technology, engineering drawing.
- DEPARTMENT OF ELECTRICAL ENGINEERING
Electro techniques, electrical machines, power systems.
- Teachers of English as a Foreign Language are also required.
- Applications are also invited from spouses of applicants for any of the above posts for a position as teacher in the Institute's primary school. Applicants should be qualified and experienced teachers at primary level. The salary will be approximately LD1659 PA net.

II TECHNICIANS

Technicians are also required in the above areas. Applicants should have at least an HND or equivalent and have some experience.
Gross annual emoluments range as follows:

PROFESSORS LD11,760-LD13,110
ASSOCIATE PROFESSORS LD10,410-LD11,760
ASSISTANT PROFESSORS LD9,510-LD10,410
LECTURER LD8,760-LD9,510
ASSISTANT LECTURER LD7,541-LD8,756

*The technical staff pay scale depends on qualifications and experience.
Salaries are on an increment scale.
The rate of exchange from Libyan Dinars to £ Sterling is approximately 1LD = £2.1.

- In addition to this, successful candidates will receive the following benefits:
The Institute provides fully furnished air-conditioned accommodation within the campus.
- Free passage to and from the place of recruitment for self and family up to a maximum of four children under 18 years of age.
- Baggage allowance for transportation of personnel effects up to 25% of air charges.
- Air tickets for annual leave are provided for self and family as mentioned above.
- The Institute pays a research allowance of up to 35% of the basic salary.
- Free medical services for the staff member and family.
- On termination, the staff member will receive a gratuity of two months pay for each completed year of service payable at the end of the contract.

The cost of living is quite moderate and a considerable portion of the salary every month can be saved.

Applications in writing please, enclosing the names and addresses of two referees, curriculum vitae and day time telephone number to:

Mr Klaus Rhy-Jones, Education Division
Plyco Enterprises Ltd
London House, 266 Fulham Road, London SW10 9EL

Closing date: 15th September 1983.

AUSTRALIA

JANET CLARKE HALL

THE UNIVERSITY OF MELBOURNE

PRINCIPAL

Applications are invited for appointment as Principal of Janet Clarke Hall, a co-educational, residential College of 100 members, affiliated with the University of Melbourne. The Hall is an Anglican foundation. Salary and benefits are linked to the University salary range of Senior Lecturer (A\$30,096-A\$35,077). Applicants should write to the Chairman of Council, Janet Clarke Hall, Parkville, Victoria, 3052, Australia, to obtain a statement of the duties of Principal and conditions of appointment.

The successful applicant should take up the position at the beginning of 1985.
Applications close by 30 September 1983.

THE UNIVERSITY OF WESTERN ONTARIO

CHAIRMAN,
DEPARTMENT OF HISTORY

Nominations and applications are invited for the position of Chairman of the Department of History, Faculty of Social Science, effective 1 July, 1984.

A Senate Selection Committee recommends an appointment for a three- to five-year term, renewable.
Nominations and applications should be sent to: Chairman of the Selection Committee, Professor Denis Smith, Dean, Faculty of Social Science, The University of Western Ontario, London, Ontario, Canada N6A 6G2.

The deadline for submission is 15 October, 1983.

In accordance with Canadian immigration requirements, advertisements are directed to Canadian citizens and permanent residents.

UNIVERSITY OF NATAL
Department of Mathematics and Applied Mathematics
DURBAN, SOUTH AFRICA

Applications are invited from suitably qualified persons regardless of sex, religion, race, colour or national origin for appointment to the post of

SENIOR LECTURER

Salary in the range: R16,557 to R24,048 pa
The commencing salary notch will be dependent on the qualifications and/or experience of the successful applicant. In addition, a service bonus of 93% of one month's salary is payable annually. Application forms, further particulars of the post and information on pension, medical aid, group insurance, staff bursary, housing loan and subsidy schemes, long leave conditions and travelling expenses are obtainable from the Secretary, South African Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE or the Registrar, University of Natal, King George Avenue, Durban, 4013 with the applications, on the prescribed form, must be lodged not later than 31 October 1983, quoting the reference D108/83.

Further particulars from the Registrar, University of Natal, 278 High Holborn, London WC1V 7HE or the Registrar, University of Natal, King George Avenue, Durban, 4013 with the applications, on the prescribed form, must be lodged not later than 31 October 1983, quoting the reference D108/83.

Universities cont

University of
Bradford
ADMINISTRATIVE ASSISTANT

Applications are invited from graduates or holders of an appropriate qualification for appointment as Administrative Assistant in the Registrar and Secretary's Office. The work will involve the processing of information and the provision of a wide range of administrative services which is concerned with the running of the University. The successful candidate will be expected to have a proven record of research excellence in the specialty preferably in the morphological sciences e.g. ultrastructure. Preference for the above posts will be given to suitable, medically qualified candidates.

Further particulars from the Registrar, University of Bradford, 8000 University Avenue, Bradford, West Yorkshire BD9 4JL with the applications, on the prescribed form, must be lodged not later than 31 October 1983, quoting the reference D108/83.

The University of
Sheffield
SENIOR ASSISTANT/REGISTRAR

Applications are invited from suitably qualified persons for the post of Senior Assistant/Registrar in the Academic Registrar's Office. The successful candidate will be expected to have a proven record of research excellence in the specialty preferably in the morphological sciences e.g. ultrastructure. Preference for the above posts will be given to suitable, medically qualified candidates.

Further particulars from the Registrar, University of Sheffield, 100 Sheffield Hallam Street, Sheffield S1 1WB with the applications, on the prescribed form, must be lodged not later than 31 October 1983, quoting the reference D108/83.

University of London
Queen Mary College
ADMINISTRATIVE POSTS

Applications are invited for the following posts:
Overseas Students Office - a person with relevant experience to act as promoter and co-ordinator of overseas student recruitment and focus on the collection of overseas student fees.
Immigration requirements, this advertisement is directed to Canadian citizens and permanent residents.

Further particulars from the Registrar, University of London, 100 Tottenham Court Road, London W1P 0LP with the applications, on the prescribed form, must be lodged not later than 31 October 1983, quoting the reference D108/83.

University of Otago
Presbyterian Church of New Zealand
Theological Hall

Following the retirement of Professor J. B. (Bob) Davidson, PhD, FRS, applications are invited for a

PROFESSOR OF NEW TESTAMENT STUDIES

at the Theological Hall, Knox College, Dunedin.

Applicants should be in the field of New Testament studies and have a proven record of research excellence in the specialty preferably in the morphological sciences e.g. ultrastructure. Preference for the above posts will be given to suitable, medically qualified candidates.

Further particulars from the Registrar, University of Otago, 100 Theological Hall, Knox College, Dunedin, with the applications, on the prescribed form, must be lodged not later than 31 October 1983, quoting the reference D108/83.

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Further particulars from the Registrar, University of Otago, 100 Theological Hall, Knox College, Dunedin, with the applications, on the prescribed form, must be lodged not later than 31 October 1983, quoting the reference D108/83.

University of
Birmingham
Department of English
English Language Institute

RESEARCH ASSOCIATES IN LEXICOGRAPHY AND GRAMMAR

As a result of a major project in computational lexicography under the direction of Professor J. M. Sinclair.

Salary £6,510-£8,530 per annum.

The appointments are in permanent posts for the period December 1984 until the end of the project in computational lexicography. Applications should be sent to the Registrar, University of Birmingham, 290 Edgbaston Park Road, Birmingham B15 2TT, with the applications, on the prescribed form, must be lodged not later than 31 October 1983, quoting the reference D108/83.

Heriot-Watt
University
Department of Computer Science

2 LECTURERS

Applications are invited for the above posts which are available for appointment as soon as possible.

The Department has in recent years been active in the field of computer science and is seeking to expand its research and teaching activities. The main research areas are currently in the field of artificial intelligence, knowledge-based systems and logic programming. The successful candidate will be expected to have a proven record of research excellence in the specialty preferably in the morphological sciences e.g. ultrastructure. Preference for the above posts will be given to suitable, medically qualified candidates.

Further particulars from the Registrar, Heriot-Watt University, 100 The Waterfront, Edinburgh EH3 9JY with the applications, on the prescribed form, must be lodged not later than 31 October 1983, quoting the reference D108/83.

University of London
Queen Mary College
ADMINISTRATIVE POSTS

Applications are invited for the following posts:
Overseas Students Office - a person with relevant experience to act as promoter and co-ordinator of overseas student recruitment and focus on the collection of overseas student fees.

Immigration requirements, this advertisement is directed to Canadian citizens and permanent residents.

Further particulars from the Registrar, University of London, 100 Tottenham Court Road, London W1P 0LP with the applications, on the prescribed form, must be lodged not later than 31 October 1983, quoting the reference D108/83.

University of Otago
Presbyterian Church of New Zealand
Theological Hall

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PROFESSOR OF NEW TESTAMENT STUDIES

at the Theological Hall, Knox College, Dunedin.

Applicants should be in the field of New Testament studies and have a proven record of research excellence in the specialty preferably in the morphological sciences e.g. ultrastructure. Preference for the above posts will be given to suitable, medically qualified candidates.

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Don's diary

Monday

Arrive to face my correspondence shirked since the previous week. Hiding the pile under the corner of my lino (floor coverings symbolize their owner's status in the university hierarchy as much as in the Civil Service) only helps until I trip over it. Excavation now reveals the inevitable pile of bureaucratic communications with contents like: "Your pension calculation 24 pages" or "We regret to announce the serious injury suffered by the university safety officer, struck down yesterday by the collapse of his information tray". This morning brings a note on fire drill closely followed by an Asian student who inquires whether university fires always begin at times fixed in advance.

My teaching session this morning brings the usual problems. Ever since I designed this course which applies some social anthropological skills to the needs of rural development managers I have struggled with a wide array of students' objections to their work as well as their doubts about anthropology itself. These are in addition to trying to improve my teaching abilities, overcome language and cultural misconceptions and squeeze the course material into the permitted time.

There is some encouragement however. In spite of the problems and my inability to offer a simple comprehensive strategy for their work, by the middle of the course the students become enthusiastic. This continues in their work or so the evaluations suggest.

Tuesday

Hectic day which begins ominously. Discover the staff-student common room has run out of coffee (my responsibility), so hurry out to purchase more. Must check if Brazilian, Tanzanian, Guatemalan or whatever origin and remove labels. Memories of my bulk purchase of coffee when prices fell, and how that led to protests from those who felt I was exploiting the coffee workers. The next protest to arrive was a reminder from others not to increase the level of the coffee subscription.

Morning tutorial with a Nepali student reveals a characteristic personal worry for him. After 14 years managing agricultural development programmes he fears that he may have lost his ability to cope successfully with a postgraduate course. Our discussion cannot be hurried, for culture-shock and other fears are very real. Indeed I marvel at the flexibility of most trainees who do come to terms with a puzzling new educational and social framework within a very short time.

Staff meeting. This afternoon we are due to review our publicity materials for the coming year, for the programme handbook. Having observed the trend in other university departments towards more attractive advertising, we argue over the approach we favour, and how much glossy paper, photos or artwork will cost. Leave meeting at 5.40 pm with a stack of industrial size, trade descriptions and a small opportunity for legislation still fresh in my mind.

Wednesday

Storm before the calm? Wake with an ominous feeling of unease. Probably not caused by my dreams of blurring an advertising agency to polish our image and promote my teaching. "Anthropology - Strong and Free". "Come, come, come and listen to the talking drum" - I am gathered by recalling that I am due in Milton today for that conference. Preferring arrival with three minutes to spare only to find the flight delayed for two hours.

Visiting Milton provides a certain compensation for those conference and check uncertainties. It is only for a couple of days. This conference, of the University of Cambridge, relating institutions and their development

extremely friendly gathering. Meeting colleagues involved in the same work usually helps me to clarify my ideas as well as to discover fresh problems. For this reason whenever possible I avoid the more crowded symposia in favour of those where some discussion is possible.

Most conferences have their memorable mistakes. In Ireland a couple of months ago this came when the local mayor, nervous interfering with his speech of welcome, told us that the Danes founded Bangladesh. Today at a time when some of us worry about misappropriation of development programmes funds, I notice a paper entitled *The Location of Training Programs for Third World Development Workers*. Location would never have sounded so good.

Thursday

Wake up in converted monastery, opposite the church of Santa Maria delle Grazie. Apparently the original inhabitants vacated the building in favour of something warmer in winter, but since then the EEC designers have taken over. The decor is strikingly modern and pleasing, even though it does take me 10 minutes to discover where the bed is concealed.

Walking through Via Magenta this morning to our conference location the growth of the Italian protection "industrial" strikes me. Surely there are many more armed guards since I was last here. All prestige apartment blocks, banks, company headquarters and business directors seem to have hired individuals who make Securitor look like park attendants; for these guards bristle with machine-guns and handguns. Since our conference is totally unguarded it is easy to gauge the degree of significance in which "development" is held here as in much of the rest of Europe and North America.

Friday

Returning this morning on a British Airways plane I am hit on the head by a falling ventilation and light unit. Watching the wings swaying gently in flight I wonder what else may be shaking loose that we cannot see until too late. But that is too close to home for many "development" programmes. We often fail to notice which critical components of change are going wrong until the damage is done.

Get back to my office and that pile of letters. Make them disappear under the lino. One of my Masters students arrives to announce she has selected her dissertation topic but doubts whether her work experience can easily be compressed into the form required by an academic dissertation. She makes a good point. While successful "development" is more frequently measured in writing but effective practical problem-solving, our training tries to assess these practical skills in terms of understanding theory. And we do not try to assess physical stamina which often counts equally highly.

In this case we agree that the can plan the basis of a new adult extension education programme through the medium of a dissertation. Hope privately that she will be more successful than I am at resolving this problem of assessment with her trainees.

Saturday

The longer I work in this field, the more good sense I discover in Voltaire's injunction (through Candide) to the state of our garden. I only try to grow vegetables and when I am at home usually spend at least part of the weekend in this way. This was a garden is especially welcoming when I remember that, with colleagues, I am due to leave the annual field visit in northern Portugal next Wednesday. Physical stamina is probably the most important quality for today's development worker.

Tom Gabriel

Thoughts about our customers

Tessa Blackstone the week before last rightly asked why universities and polytechnics, as large employers of labour, have not even made use of cheap labour (my words, not hers) from the Youth Opportunity Programme, let alone helped in the massive expansion of the Manpower Services Commission and the new Youth Training Scheme.

It was FE that rose to the challenge of training the trainers and proved unexpectedly flexible (all that buried and brow beaten talent of the lecturers). But the universities did sweet nothing. The answer may not be simply ignorance, inertia, introversion or the unions, but more commendably shame.

Shame is a basic human emotion. Perhaps through the reading of novels, psychology or professional rivalry, a sense of shame still survives even among full-time tenured university staff, however skillfully we remove ourselves from life. If library, clerical, maintenance, canteen, cleaning and porterage facilities skills were dramatically increased by use of YOPs, embarrassment rather than pragmatic gratitude might dominate. And we would also wish to spare our students the embarrassment of the actual presence of their contemporaries who did not choose their parents with care.

Over-qualified secretaries on poor salaries who "like the university atmosphere" flatter us, but would we and our pensioners and the straight-from-school students on state grants feel that all our activities were - to coin a phrase - "self-justifying"? If conducted in front of YOPs? Not all of the 250,000 workless school leavers would look equally grateful, especially those aware that only about 20 per cent will truly believe that even Oxford and Cambridge could face with declining service, would feel (except at Peterhouse) shame at having YOPs as servants, scudles, beshlows or whatever. Our very literacy (well, most of us) makes YOP sound not merely close to YGB but associative with YAHQG (which, I point out, has five letters like PROLE).

Tessa Blackstone also noted a contrary trend among the favoured young: the "year off" fashion - that spontaneous movement of the three A-levelled young to "do something real" before coming up. A song, she said, is that they can compete for jobs with the ordinary school leaver; but an advance is that they gain some experience of the real world of signing on and the dole queue.

But the main advantage may be to



Bernard Crick

the universities and polytechnics: being a year older and having been out and about, they waste less time in the first year with the silly, trivial, human problems of living away from home for the first time. But in fact, "doing something real" is often less the motive than a consequence of wanting to travel and a belief in "independency". My number two son has just done four months in a bookshop wrapping and despatching, two on a kibbutz and six weeks on the road in Egypt and Turkey until his money ran out. And he now signs on.

I don't like that, but he sees it as his right since he has worked, though both his mother and I would keep him for the three (two or one?) months left for reading. They now like to be independent and to see the world. This is no "back to the people" movement, but simply a welcome and rather American lack of inhibition about casual work.

National policy is so wrong. One of the soundest parts of the Labour's famous programme was the plank on continuing education. Neil Kinnock and Philip Whitehead had a real sense of the real needs of all the country. But there was nothing specifically or exclusively socialist in arguing (in effect) for a relative shift of resources from three year, straight-from-school full-time into a continuing education entitlement for all.

I am surprised that Sir Keith hasn't reached the same conclusions by another route: "self-help" and adult education can cut across both old Labourism and new Toryism. I hoped the Government would have forced the universities to devote more resources to non-degree work for mature students, to offer more higher studies in

small packets to meet specific local needs: not just extra-mural expanded slightly, but extra-mural taken fully and made a central concern of all departments, a normal part of a fully contracted work.

No, not another paeon for Birkbeck and the OU principle. I'll appear, obsessed, and one of them blows my own trumpet well enough. Rather, how worthy and how unsung are the five centrally funded full-time residential colleges of adult education: Ruskin, Coleg Hsrich, Ffrin, Hylkyn and Newbattle Abbey; and also the new Northern College mainly funded by local authorities and trades unions (not forgetting to wish good luck to similar attempts in Ulster). Take Coleg Hsrich, which I know best: brave, beautiful, lively, serious and also a great provider of events to the local communities and a summer school. It was founded in 1927 as a voluntary body to give a residential experience to liberal studies to young workers, to return to and strengthen their communities and unions.

It has become almost entirely devoted to a full-time two-year diploma of the University of Wales with specificisms. Sixty-eight per cent of its students over a decade have gone on to first degree courses and 90 per cent to some form of further full-time study. The students are excellent. I've examined them and taught the product. And it was never exclusively Welsh, now outside the Principality.

Thus its academic standard is high and it proves, once again, how large the pool of ability far more people who miss out on or muck up school opportunities can not only meet but benefit later but, I am convinced, at more cost of it later. The staff are also more mature. Mixing with the 18 to 21 age group all the time can have a big effect.

Now it is endlessly debatable whether the Coleg has been right to turn itself so decidedly into a second chance feeder to the university. Moloch; and also to be so proud of its national standing in Britain. There are cases for a definitely Welsh national institution, in which others can study broader case even (as I have said before) for all higher education to cultivate local roots. There is a moderate and essential Welshness in education in Wales and beyond. The Welsh pride in educational achievement is recognized by the English, can contradict their own poor Welshness.

I'm less and less sold on the idea of a common high culture: the life of the provinces must feed and restrain the bureaucratizing centre. I notice how the great University of Edinburgh walks like a cat on eggs in its four hundredth anniversary celebration between preening its Scottishness and stressing its international reputation. That is one way.

on destroying the effective means for individuals and associations to protect their civil liberties and collective bargaining rights.

In fact, the government departments that are being abolished or reduced are those that have been under public attack since this government. In the past, such actions do not give academicians any reason to believe the minister's assurances that this government will respect academic freedom. It is not even clear, moreover, that the minister was consulted on the legislation prior to its introduction.

Although the BC government's legislation entails the most comprehensive attack on public sector employment, it is not unfortunately an only child. Under the guise of financial restraint, both levels of government have attacked public employees. Such employees appear to be too tempting a target for government's beset with failed employment and industrial policies to ignore. In a period of high unemployment drawing attention to these seemingly secure positions reduces the media's attention on the failures of longer term economic and social policies.

It is clear that collective bargaining rights have reached a crossroads. It is not clear whether Canadian public servants will be successful in their attempts to eliminate the right of public sector employees to effectively negotiate their terms and conditions of employment.

Ronald Levesque

The author is executive secretary of the Canadian Association of University Teachers.

LETTERS TO THE EDITOR

Margin of error in peer review

Sir, - Your peer review of politics (*THES*, August 5) should have been accepted unreservedly. While it identifies four or five centres of excellence judged by the research criterion, the remainder seem to me very much subject to a margin of error. The difficulty is compounded by the problem of delimiting politics compared with the other subjects of the peer review. To illustrate the point, what is on offer at Cambridge to the student of politics in terms modern history would, if taken into account, lift that centre of learning appreciably.

The margin of error is affected by the lumpiness produced by the mobility and publication rate of individual scholars. A single publication, perhaps never to be repeated, may confer distinction on an institution. Again, a single scholar may raise the status of successive institutions. An illustration

is Professor Sammy Finer, continuous and creative for decades, who has advanced in turn Keele, Manchester, and Oxford.

There is a danger in politics that the grant-financed machine - data-bank and computer - may take over and supplant creative thought. In the 1960s and 1970s a terrible languor befell British political science due to three reasons: a complacency with institutions that mirrored the wider complacency of society, a close identity on the part of many political scientists with the Labour Party, and a lack of critical distance between leading political scientists and leading politicians. There is now in 1983 every sign of fresh thinking, but in its time this languor affected centres of excellence along with the rest. When I investigated the subject as an independent observer a year ago, I was told repeatedly that

Manchester was not what it was and that it was living on the hump of former glories.

In spite of the machines it is still the insight and independence of the individual scholar that count. Again and again we are led to believe that it is the data that counts, yet write-ups of expensive data-collection exercises such as Butler and Stokes' *Political Change in Britain* are failed interpretations. There are a few masters in British political science and many journeymen, few masterpieces and much routine. To the student I would say: seek out the masters and cleave to them.

Yours sincerely,
VINEYTH BURGIN,
21 The Hawthorns,
Whitehall Road,
Woodford Green,
Essex.

Police research

Sir, - Your report referring in criticism of my research paper "Are the Police Fair?" (*THES*, August 5) contains a number of inaccuracies. In my knowledge Mr Alan Watton has not criticized it and certainly Dr Anderson has not replied to any such criticism. That debate refers to entirely separate publications of the Social Affairs Unit. Nevertheless, the remarks attributed to Dr Baldwin (who I assume to be John "Rubert" deserves some reply.

In fact, I have some sympathy for his view: it may, indeed, seem harsh to condemn a whole discipline for the misdeeds of a few. However, while those whom I criticize may be a few, they are, unfortunately, an influential few. The image they purvey of the police as a malign influence is disseminated in popular textbooks; contained in the most widely cited references; contributes to the assumptions underlying research on related topics, such as race relations; is presumed by those engaging in sociologically-informed polemic (especially fol-

lowing the 1981 riots); forms an integral part of an Open University course; and has begun to inform journalistic treatments of police issues. The sociological profession does bear some corporate responsibility for allowing this false image to go largely unchallenged.

Although it was clearly beyond its scope to refer to all contributions to this topic, my report did address itself to research and argument which has, sadly, become received sociological wisdom. It is precisely because I do care about my discipline that I am unprepared to allow such a view to go unchallenged. However, since my report clearly commends some sociological research, it should be clear that not all sociologists are guilty of the failings identified therein. It is because these honourable exceptions have gone largely unheard, that the time has come to challenge this prevailing view more forcefully.

Yours faithfully,
P. A. J. WADDINGTON,
University of Reading.

Training engineers

Sir, - The Engineering Council's first statement on "Enhanced and Extended Undergraduate Engineering Degree Courses" (*THES*, August 5) sets out a number of recommendations to improve the initial education and training of engineers at all levels. While there are points of detail with which I might argue, I very much welcome the whole tenor of the statement with its emphasis on multi-disciplinary education, an understanding of business and the need for engineers to keep abreast of their markets and innovation.

If the challenges facing industry are to be met successfully, then at least equal emphasis will have to be placed on the initial and continuing formation of technicians and technician engineers. Proper provision of market oriented multi-disciplinary engineering education at the top implies also proper provision for those who have to carry out the detailed work. My council is working with engineering companies to develop and keep up to date BTEC courses for technologists and technician engineers who will still be employed well into the twenty-first century. We would welcome collaboration with the Engineering Council to match the development of the professional and the technician teams.

Yours faithfully,
H. N. RAINE, Chairman,
Business & Technician Education Council.

Blind students

Sir, - Congratulations to blind student Pauline McDoosid, (*THES*, July 22) who has recently received her honours degree at Leeds University.

Readers may like to know that the Royal National Institute for the Blind is now helping another 340 visually handicapped students, like Pauline, in universities, polytechnics and colleges throughout the UK.

RNB's student advisers discuss study methods and careers and provide grants to offset additional expenses such as for tape-recorders or braille equipment. RNB's student libraries transcribe books into braille and re-

cord them on tape for individual students to demand.

RNB also publishes, jointly with the National Bureau for Handicapped Students, a leaflet for students and staff *Blind and partially sighted students in college* which is available in print, braille, or on tape free from RNB, 224 Great Portland Street, London W1N 6AA.

Yours sincerely,
LUCILLE HALL.

Letters for publication should arrive by Tuesday morning. They should be as short as possible, and without on one side of the paper. The editor reserves the right to edit or amend them if necessary.

Nautical education

Sir, - It seemed unfortunate that your recent report on nautical education (*THES*, August 5) did not mention that the four centres being proposed by the National Advisory Body are South Tyneside, Liverpool, Southampton and Plymouth and that the case for them was cogently argued in extensive documents submitted to the board and supported by an HMI report.

The committee which reversed the narrow decision of the board is therefore to be congratulated in identifying the essence of the problem which is no less than the survival of nautical education in this country and all that means for British shipping and its obvious overtones for defence. Rationalization is in fact long overdue as was recommended by the Rochdale committee in 1970.

What is not generally understood is the considerable expense of nautical education, and with increasing technology it will become more so. Ship simulators cost upward of £1m. Nautical education is best concentrated in a few centres with easy access to a range of advanced science and engineering disciplines.

Indeed, so important do we think this locally that the Cadet School, formerly part of the Plymouth College of Further Education, is now to become part of the faculty of maritime studies of the polytechnic. It also appears that Fleetwood and Liverpool polytechnics are contemplating a similar move. If, on occasions, the board acts politically, it is a reassurance that the committee can be state-of-the-art and it generates a certain confidence that NAB is able to steer educational planning issues which are national rather than regional or local.

Yours faithfully,
MICHAEL ROBBINS,
Director,
Plymouth Polytechnic.

Cheshire fees

Sir, - I write to correct a misleading impression given by your report (*THES*, July 29) concerning remission of fees in Cheshire further education colleges.

It was implied in your report that the Liberal group on the county council had acted as the US Cavalry in rescuing further education students from the jaws and afrow of an outrageous imposture - that of being charged fees. This is wrong. The Liberal group in alliance with the Tories form Cheshire's ruling administration. It was they who promoted this attack on FE (as opposed to school) students. It was the Labour group, in conjunction with the non-political members of the education committee, which defeated the move. It is the Labour group, too, which has unreservedly highlighted Cheshire's disgraceful failure to give educational maintenance allowances.

This Cheshire stands alone amongst educational authorities in the North West.

No, the redskins in this matter have been the Tory/ Liberal Alliance - not County Hall. And it was they who had the red faces when obliged to withdraw their discriminatory policy to full council. If the Liberals next year dare to support the introduction of EMAs, they will be jumping on Labour's wagon.

Yours faithfully,
J. DUNCAN HARRISON,
Chairman of Further Education Committee,
28 Clifton Road, Cheshire.

A worm's eye view of mission control

Before the National Advisory Body pronounces on its distribution of the dwindling number of pound notes in the central pool for advanced higher education - as well as on the future of student numbers, subjects, departments and institutions - it is perhaps timely to pause and consider the body's current stance among those who will be charged with making its recommendations work. This worm's-eye view is timely since all judgments, favourable and unfavourable, issued after the release of the "national plan" will naturally be accused of special pleading.

First of all we should recognize the extent in which the reputations of individuals and institutions with a powerful influence over the way in which the system has developed in the last decade are tied up with the future of the body. The local authorities, Her Majesty's Inspectors of the National Association of Teachers in Further and Higher Education, the Committee of Directors of Polytechnics and the Council for National Academic Awards have all invested heavily, although their representatives have been insulated by the curiously English device of service "in a personal capacity". As a result of this device we have had the undiluted spectacle of alternative "readings" of board papers and discussions by individuals apparently trading, but not formally authorized to do so, on behalf of their organizations. All such representatives justify their participation as a necessary and constructive step towards more rational planning for the sector. In doing so they have accepted compromises, some of which have locked them into decisions without any discussions of constructive alternatives.

For a start the adjective "Interim" has been dropped from the title of the body and from all official descriptions of its functions. This has produced a more felicitous acronym, and strengthened the hand of those inside the body urging those of us outside to accept the short-term pain of surgery in the interests of longer-term therapy. More seriously, our representatives have with a few hiccups accepted first what they are primarily engaged upon is a cost-cutting exercise and secondly that a competent and responsible exercise can be carried out within the body's tight timetable.

Both of those latter decisions (even if they are more fairly characterized as acquiescence than agreement) have wide-ranging implications. As the documentary evidence confirms, first there is the body's "consultative paper", now being considered by institutions, on the future shape of provision. Much has been made of the "convergence" between this and other statements in circulation; another consultative paper from the CNA and the final report of the Leverhulme seminars. But any convergence is superficial.

The NAB, unlike the CNA and Leverhulme, has from the political point determined by the Government that a very much to be found to keep the age participation rate respectable while saving money. Although the document is drafted in neutral terms it is not hard to discern a favoured solution of open access (a revised Robbins principle) at least cost through shorter courses and reform of the academic year. Unlike the other two papers NAB's ignores the principle of "even-handedness" across the binary line and the role of research and scholarship in this public sector.

On research it is revealing that another NAB paper has been circulated for comment suggesting holding back even more of the pool for competitive reinsurance by the body. This prospect could be devastating for low-cost institutions determined to maintain viable academic communities at the average unit cost, thus further artificially depressed, falls.

Secondly, there is the question of what a national plan will look like. Most of us will have sympathy with the hard-headed under-lying NAB secretary, opposing the bulky envelopes submitted by local authorities and attempting to analyse a wealth of non-comparable data based on outdated curricular categories and insufficient guidance about the relationship between full-time, part-time, and mixed-mode students. For one, am

confident that within the NAB there is the brain-power and awareness of issues that could lead to sensible recommendations about relative costs and demand for different subjects (the sophistication of the papers from their various working groups affirms this).

I am equally convinced that this cannot be accomplished by September. Instead the first NAB national plan will assign cash and student numbers to programme areas that not only collapse a spectrum of costs and demand within each (think of "languages and literature" or "other technology") but also ignore the one quarter of CNAA-validated work that is concentrated in combined studies or multi-subject courses. The plan will, moreover, through a reliance on outmoded Department of Education and Science criteria for "class hours" and the weighting of part-time students, at best fail to acknowledge and at worst damage the schemes of those institutions who have significantly revised teaching methods in the interest of greater efficiency or moved towards a desirable integration of full-time and part-time work.

Acquiescence to this extent means, sadly, that the non-governmental participants have cashed in powerful potential assets in terms of independent judgment for the poor bargain of participation in a rushed and unconvincing operation. The Government has succeeded, more than it could perhaps have dared to hope, in an exercise of co-optation.

Motives for cooperation have, of course, varied. Inspectors have gained a new angle for leverage over curriculum design. The NAB representatives, for whom higher education is only part of a larger constituency have seen no particular danger in a fall in the unit of resource on one side of the binary divide against the background of their wider responsibility for non-advanced further education. The CDP remain engaged, despite one resignation and another formidable outburst of dissent (their secretary has reminded us that his members serve "in a personal capacity"), and perhaps see a chance to recoup some ground lost to the state colleges and institutions of higher education in the system of the mid-1970s. Diversification of teacher training. The local authorities are holding on, well aware that in that part of the fiscal equation crudely termed "topping-up" they will retain final control over most marginal cases.

Then there is the CNAA, highly conscious of its current profitability (the product chiefly of "windfall" extra registrations on its courses in the wake of UGC-inspired cuts in university student numbers) and its possession of the only really detailed archive of information about the system. The council has, to its credit, organized hardest and most publicly about the price of participation. This price must surely include not only the effective end of its initiative on "partnership in validation" but also a rift between officers and members.

In public relations terms what we have received, most eloquently from the board's energetic chairman, is a mixture of threat and reassurance: institutions not co-opted are fully within the body's hurriedly devised and confusing questionnaire on plans for 1984/85 have been told that if they are incapable of forward planning the job will be done for them. Individuals expressing doubts have been urged to be realistic in the face of Treasury-led demands and the certainty that if the individuals currently engaged were not in those fighting for the best interests of the sector "things would be so much worse".

At the risk of accusations of bad taste I suggest that this behaviour pattern has a revealing parallel in recent history and political science. It reminds me particularly of the American State Department's masterly copation of the liberal-academic foreign policy establishment to its policy towards South-East Asia in the 1960s and early 1970s. How many missions will NAB be able to fly and retain any confidence within the academic community?

David Watson

The author is dean of the modular course at Oxford Polytechnic.